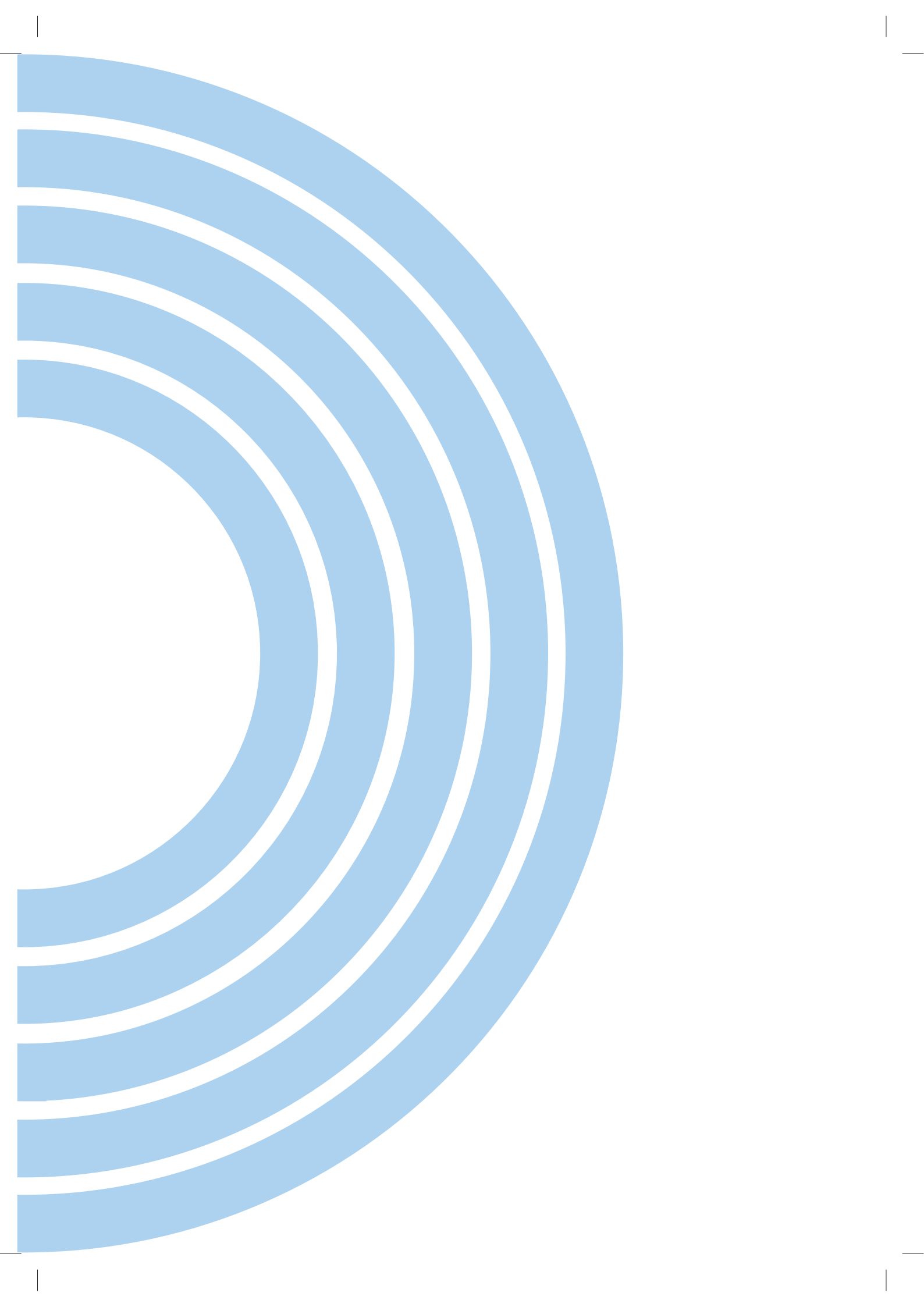




**FIBER OPTIC CABLES**  
Product Catalogue 2015

 **KDP**<sup>®</sup>  
WORLD CONNECTING CABLES



## Dear Customers,

since 1910 we have been supplying the cables which help you to solve your problems through communication. Enclosed, please, find a new comprehensive catalogue containing the basic product line of our company.

We tried not only to include the standard products that you probably know very well, but some innovations and brand new products as well. Despite the catalogue is considered as a complete presentation of our production, not all variants can be published and included.

For some special products, please, contact our Sales Department that will provide you with any information requested. Let us advise you of the fact that all cable parameters in this catalogue are for information only.

All rights reserved.

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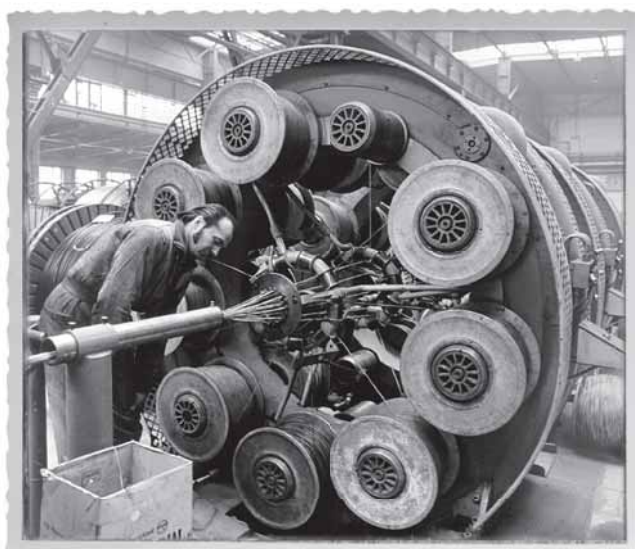
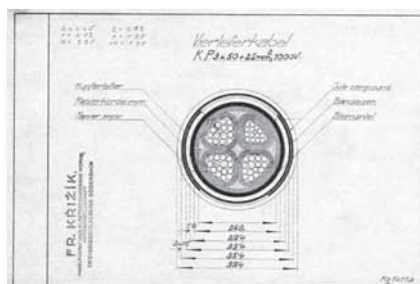


# History and present of **KABELOVNA** Děčín Podmokly



KDP was founded in 1909 and 1910 as a branch of the Bergmann cable plants in Berlin, the original name of the company being „Rakouské Bergmannovy závody spol. s r.o., Vídeň, továrna Podmokly“.

From the very outset the plant manufactured all types of power and communications cables with lead casing and the relevant cable sets, as well as rubber-insulated conductors, dynamo wires and insulation pipes with accessories. Company activity at that time also included projects involving electrical equipment and its installation.





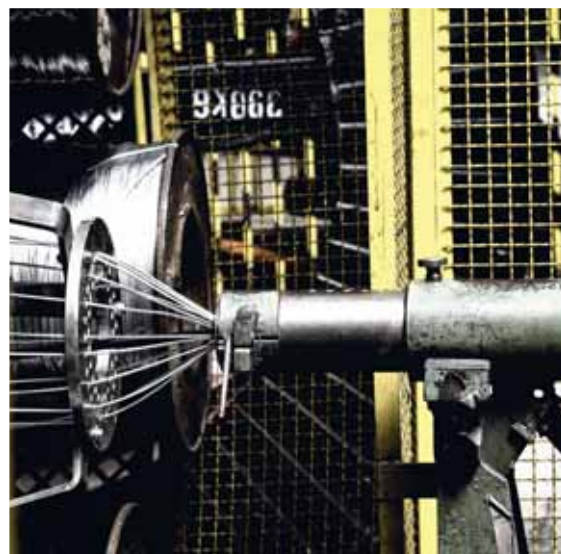
The cable factory came into the hands of Anglo-Pragobanka as part of Křižík a spol. Praha after the First World War and this company reconstructed the entire business. The production of trunk communications cables got underway at this time. The cable factory and neighbouring copper works were then merged in 1932 as the „Měďárna, kabelovna a elektrotechnické závody Křižík-Chaudoir, Praha“. However, the production programme at the cable factory did not change too radically.

The company was nationalised after 1945. It was later incorporated as part of KABLO Kladno and its specialisation amplified. The main production programme became the manufacture of communications cables and in 1961 KABLO Děčín became the monopoly producer of cables for local and long-distance telecommunications networks using top-of-the-range technology. The company was privatised after 1990, became independent again and returned to its traditional name of KABELOVNA Děčín-Podmokly, a.s. SIEMENS AG then entered the company in 1992. The result of mutual cooperation here was considerable modernisation of production technology, the expansion of the range produced and the strengthening of KABELOVNA Děčín-Podmokly, a.s. on global markets.

SIEMENS sold its share in KABELOVNA to American venture-capital fund Bancroft: Eastern Europe Fund L.P. in July 2000, before this company in turn sold its share to American company CDT (Cable Design Technology) in December 2001.

CDT then merged with American company BELDEN in 2004, the newly-founded company taking on the name of Belden CDT Inc.

2007 the cable works is sold to Wilms Gruppe, the company is divided into Kabelovna Děčín Podmokly, s.r.o. and KDP Assembly, s.r.o.



# Certificates





# History

<b>4. 9. 1909</b>	Execution of contract on establishment of company „Rakouské Bergmanovy závody, Berlín, elektrotechnická společnost, s. r. o.“ with branch in Vienna.
<b>27. 6. 1911</b>	Launch of Production – 750 employees. Production of power and communication cables, cable sets and accessories, rubber wires and insulation tubes including accessories.
<b>05/1919</b>	The company was acquired by „Elektrotechnické závody František Křižík, Praha, a. s.“ Initiation of remote communication cables production.
<b>03/1930</b>	The company completely burnt down. Production restored at the end of year 1930.
<b>05/1945</b>	The company came under national control of Křižík a. s. corporation. Then it was nationalized and became a part of national company Kablo Bratislava. Production of power and communication cables with lead coating, rubberized wires and coil wires.
<b>1. 1. 1950</b>	Establishment of national company KABLO Děčín.
<b>1959</b>	Production of remote communication cables.
<b>1961</b>	Kablo Děčín became a monopoly producer of communication cables for local networks.
<b>1982–1984</b>	Construction of new hall to expand the production of communication cables.
<b>1985</b>	Termination of power cables production.
<b>1988</b>	Initiation of optic cables production.
<b>31. 12. 1990</b>	Privatization, establishment of incorporated company. The original name KABELOVNA Děčín Podmokly, a. s. was used.
<b>1992</b>	Company share acquisition by SIEMENS AG.
<b>1994</b>	Initiation of cable assemblies production.
<b>1995</b>	ISO 9001 certification completed.
<b>1996</b>	Initiation of installation cables production.
<b>1996</b>	Czech Republic Quality Award.
<b>1998</b>	ISO 14001 certification completed.
<b>2000</b>	Establishment of subsidiary company KDP Kabeltechnik Berlin, GmbH.
<b>2000</b>	Sale of SIEMENS AG share to investment fund BANCROFT CZ.
<b>2001</b>	CDT Pittsburgh becomes a majority owner of the company.
<b>2002</b>	Complete renewal of optic cable assortment.
<b>2003</b>	Initiation of data cable production.
<b>2004</b>	Merge with Belden company, Belden CDT inc. was established.
<b>2007</b>	Wilms Gruppe becomes a new owner of Kabelovna.
<b>2010</b>	KABELOVNA Děčín Podmokly, s. r. o. celebrates 100 <sup>th</sup> Anniversary.





## **I. TIGHT-BUFFERED CABLES**

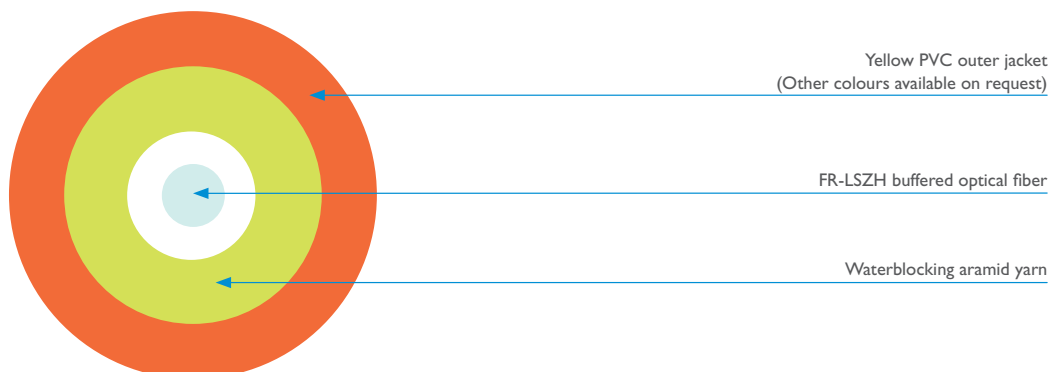
- I.1 SIMPLEX
- I.2 DUPLEX
- I.3 DISTRIBUTION
- I.4 BREAKOUT

# I SIMPLEX PVC

I.I

DIN CODE: J-V(ZN)Y IF

ID: 14x6, 18x6



## Mechanical and Environmental properties

Test		Method		Value/Unit
Max. tensile strength		*E1A	14x6	250 N
			18x6	250 N
Crush resistance		*E3		400 N/10 cm
Impact resistance		*E4		3 impacts (w/2 Nm)
Min. bend radius		*E11A		10x cable diameter (no load)
		*E11B		15x cable diameter (load)
Temperature range	Installation Operation Storage			-5 °C to +50 °C
				-5 °C to +50 °C
				-5 °C to +50 °C
Cable informative nominal weight (calc.)			14x6	6.4 kg/km
			18x6	7.4 kg/km
Standard put-up length				2,100 m
Packaging				Plywood drum
Buffer nominal diameter				0.9 mm
Simplex nominal diameter			14x6	2.4 ± 0.1 mm
			18x6	2.8 ± 0.1 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

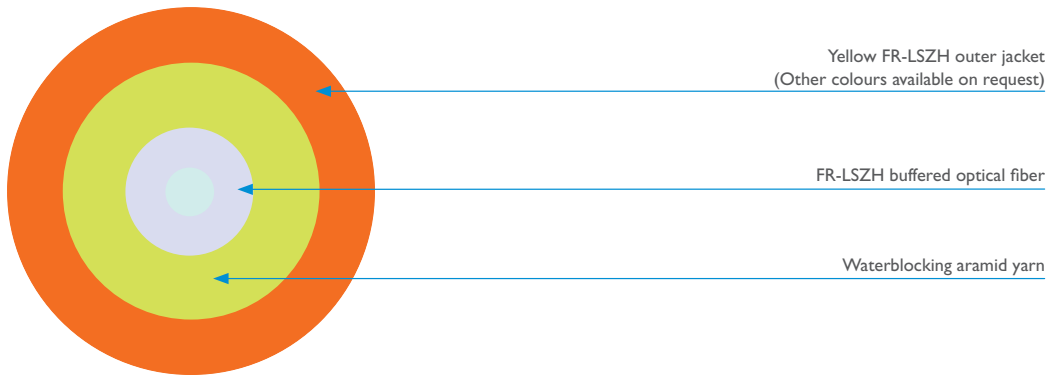
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor use.

# SIMPLEX FR-LSZH

DIN CODE: J-V(ZN)H IF

ID: 12x1, 14x1, 18x1, 19x1, 11x1, 17x1, 16x1, Z016, Z026, 13x1, 15x1



## Mechanical and Environmental properties

Test	Method	Value/Unit		
Max. tensile strength	*EIA	12x1	100 N	
		14x1, 18x1, 19x1	250 N	
		11x1, 17x1, 16x1	100 N	
		Z016	200 N	
		Z026, 13x1	250 N	
		15x1	300 N	
Crush resistance	*E3	500 N/10 cm		
Impact resistance	*E4	3 impacts (w/2 Nm)		
Min. bend radius	*E11A	10× cable diameter (no load)		
	*E11B	15× cable diameter (load)		
Temperature range	*FI	Installation	-5 °C to +50 °C	
		Operation	-5 °C to +50 °C	
		Storage	-5 °C to +50 °C	
Cable informative nominal weight (calc.)		12x1	4.5 kg/km	
		14x1	6.4 kg/km	
		18x1	7.4 kg/km	
		19x1	7.7 kg/km	
		11x1	3.5 kg/km	
		17x1	3.1 kg/km	
		16x1	2.7 kg/km	
		Z016	4.6 kg/km	
		Z026	5.5 kg/km	
		13x1	8.9 kg/km	
		15x1	7.7 kg/km	
Standard put-up length		2,100 m; 4,100 m		
Packaging		Plywood drum		
Buffer nominal diameter		0.9 mm		
Cable outer diameter		12x1	2.0 ± 0.1 mm	
		14x1	2.4 ± 0.1 mm	
		18x1	2.8 ± 0.1 mm	
		19x1	2.9 ± 0.1 mm	
		11x1	1.8 ± 0.1 mm	
		17x1	1.7 ± 0.1 mm	
		16x1	1.6 ± 0.1 mm	
		Z016	2.0 ± 0.1 mm	
		Z026	2.3 ± 0.1 mm	
		13x1	3.0 ± 0.1 mm	
		15x1	2.5 ± 0.1 mm	
				(measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

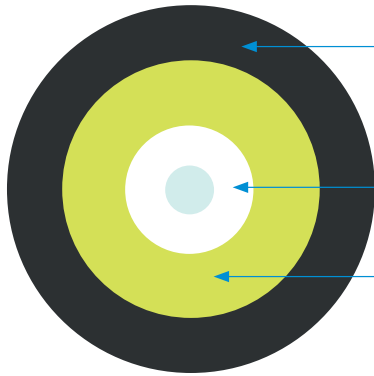
Cable life time – minimum 30 years. This cable is suitable for indoor use.

# SIMPLEX HFFR

1.1

DIN CODE: J-V(ZN)11Y IF

ID: 12x7, 15x7



Halogen free flame retardant (HFFR) black Polyurethane  
(Other jacket colours available on request)

FR-LSZH buffered optical fiber

Waterblocking aramid yarn

## Mechanical and Environmental properties

Test		Method		Value/Unit
Max. tensile strength		*E1A	12x7	100 N
		*E1A	15x7	300 N
Crush resistance		*E3		400 N/10 cm
Impact resistance		*E4		3 impacts (w/2 Nm)
Min. bend radius		*E11A		10x cable diameter (no load)
		*E11B		15x cable diameter (load)
Temperature range	Installation Operation Storage	*F1		-5 °C to +50 °C -20 °C to +70 °C -20 °C to +70 °C
Cable informative nominal weight (calc.)			12x7	4.3 kg/km
			15x7	7.4 kg/km
Standard put-up length				2,100 m
Packaging				Plywood drum
Buffer nominal diameter				0.9 mm
Simplex nominal diameter			12x7	2.0 ± 0.1 mm
			15x7	2.5 ± 0.1 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

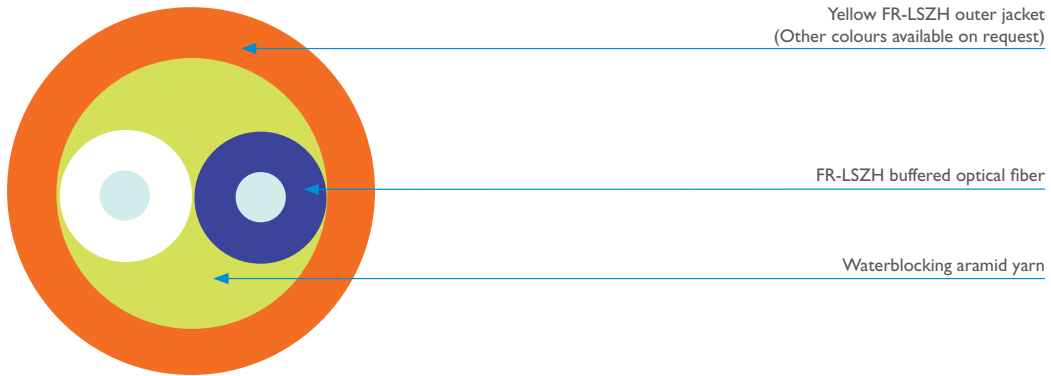
Cable life time – minimum 30 years. This cable is suitable for indoor use.

# DUPLEX

DIN CODE: J-V(ZN)H Duplex 2.8 mm 2F

ID: 20x1

I  
1.2



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	200 N
Crush resistance		*E3	400 N/10 cm
Impact resistance		*E4	3 impacts (w/2 Nm)
Min. bend radius		*E11A	10× cable diameter (no load)
		*E11B	15× cable diameter (load)
Temperature range	Installation Operation Storage		-5 °C to +50 °C
			-5 °C to +50 °C
			-5 °C to +50 °C
Cable informative nominal weight (calc.)			7.2 kg/km
Standard put-up length			2,100 m
Packaging			Plywood drum
Outer jacket thickness			0.4 ± 0.1 mm
Cable outer diameter			2.8 ± 0.1 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

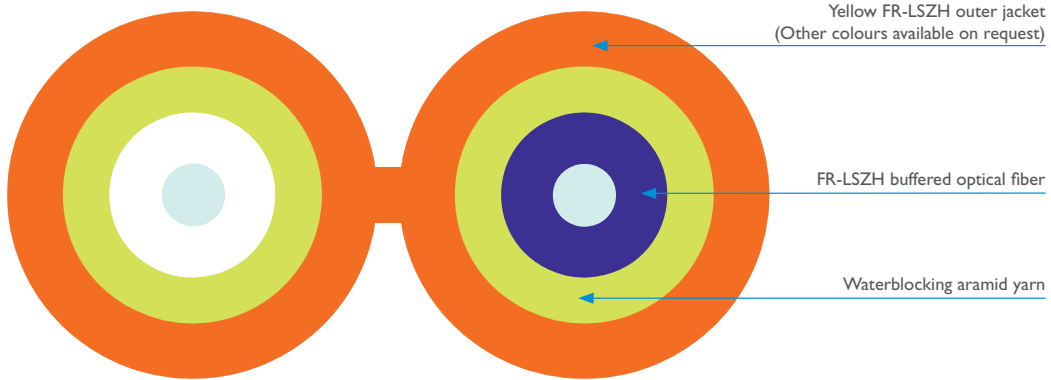
Cable life time – minimum 30 years. This cable is suitable for indoor use.

# DUPLEX-ZIP

1.2

DIN CODE: J-V(ZN)H 2F

ID: 26x1, 21x1, 22x1, 24x1, 28x1, 23x1



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1A	26x1 200 N
		21x1 200 N
		22x1 200 N
		24x1 500 N
		28x1 500 N
		23x1 500 N
Crush resistance	*E3	1,000 N/10 cm
Impact resistance	*E4	26, 21, 22x1 3 impacts (w/2 Nm) 24, 28, 23x1 3 impacts (w/4 Nm)
Min. bend radius	*E11A	10x cable diameter (no load)
	*E11B	15x cable diameter (load)
Temperature range	Installation Operation Storage	*F1 -5 °C to +50 °C
		-5 °C to +50 °C
		-5 °C to +50 °C
Cable informative nominal weight (calc.)		26x1 6 kg/km
		21x1 8 kg/km
		22x1 10 kg/km
		24x1 12.5 kg/km
		28x1 17.5 kg/km
		23x1 20.5 kg/km
Standard put-up length		2,100 m
Packaging		Plywood drum
Cable outer diameter		26x1 1.6 ± 0.1 × 3.4 ± 0.2 mm
		21x1 1.8 ± 0.1 × 3.8 ± 0.2 mm
		22x1 2.0 ± 0.1 × 4.3 ± 0.2 mm
		24x1 2.4 ± 0.1 × 5.1 ± 0.2 mm
		28x1 2.8 ± 0.1 × 5.9 ± 0.3 mm
		23x1 3.0 ± 0.1 × 6.3 ± 0.2 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor use.

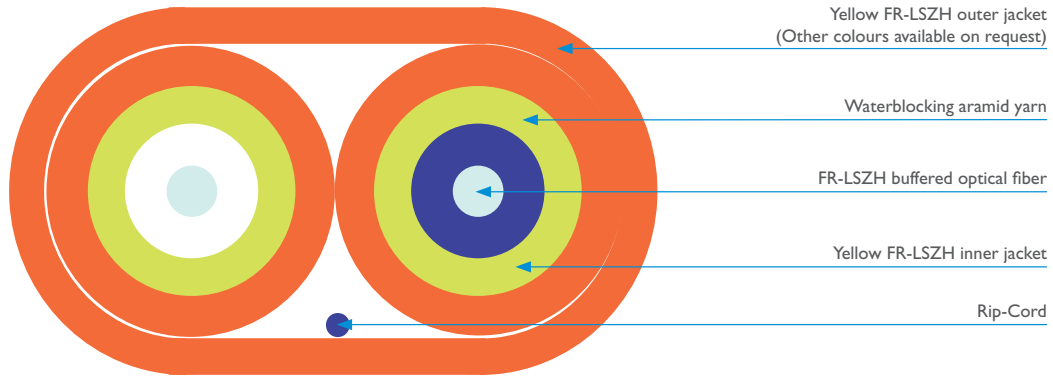


# HEAVYDUPLEX

DIN CODE: J-V(ZN)HH

ID: 32x1, 34x1, 38x1

I  
1.2



## Mechanical and Environmental properties

Test		Method		Value/Unit
Max. tensile strength		*E1A	32x1	200 N
			34x1	500 N
			38x1	500 N
Crush resistance		*E3		1,000 N/10 cm
Impact resistance		*E4		3 impacts (w/5 Nm)
Min. bend radius		*E1 IA		10x cable diameter (no load)
		*E1 IB		15x cable diameter (load)
Temperature range	Installation Operation Storage	*F1		-5 °C to +50 °C
				-5 °C to +50 °C
				-5 °C to +50 °C
Cable informative nominal weight (calc.)			32x1	19 kg/km
			34x1	27.5 kg/km
			38x1	38.5 kg/km
Standard put-up length				2,100 m
Packaging				Plywood drum
Buffer nominal diameter				0.9 mm
Simplex diameter			32x1	2.0 ± 0.1 mm
			34x1	2.4 ± 0.1 mm
			38x1	2.8 ± 0.1 mm
Outer jacket thickness			32x1	0.5 ± 0.1 mm
			34x1	0.6 ± 0.1 mm
			38x1	0.7 ± 0.2 mm
Cable outer diameter			32x1	3.0 ± 0.2 x 5.0 ± 0.2 mm
			34x1	3.6 ± 0.2 x 6.0 ± 0.2 mm
			38x1	4.2 ± 0.2 x 7.0 ± 0.2 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

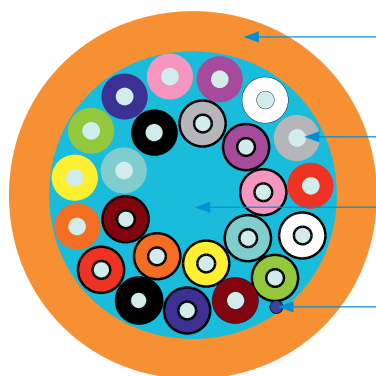
Cable life time – minimum 30 years. This cable is suitable for indoor use.

# DISTRIBUTION

I.3

DIN CODE: J/A-VQ(BN)H max. 24F

ID: 5ExI



Yellow FR-LSZH outer jacket, UV stable  
(Other colours available on request)

FR-LSZH buffered optical fiber

Waterblocking E-glass yarn

Rip-Cord

## Mechanical and Environmental properties

Test		Method		Value/Unit
Max. tensile strength		*E1A	2F	850 N
			4F	1,200 N
			6F	1,200 N
			8F	1,500 N
			12F	2,500 N
			16F	2,700 N
			24F	3,500 N
Crush resistance		*E3		2,000 N/10 cm
Impact resistance		*E4		3 impacts (w/20 Nm)
Min. bend radius		*E11		15x cable diameter (no load)
				20x cable diameter (load)
Compound flow		*E14		30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1		-5 °C to +50 °C
				-20 °C to +60 °C
				-20 °C to +60 °C
Cable informative nominal weight (calc.)			2F	32.5 kg/km
			4F	39.5 kg/km
			6F	43 kg/km
			8F	52 kg/km
			12F	66 kg/km
			16F	85 kg/km
			24F	111 kg/km
Standard put-up length				2,100 m
Packaging				Plywood drum
Outer jacket thickness			2 – 12F	1.0 ± 0.3 mm
			up 12F	1.2 ± 0.3 mm
Cable maximal outer diameter			2F	5.5 ± 0.5 mm
			4F	6.0 ± 0.5 mm
			6F	6.3 ± 0.5 mm
			8F	7.3 ± 0.5 mm
			12F	8.3 ± 0.5 mm
			16F	9.5 ± 0.5 mm
			24F	11.4 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

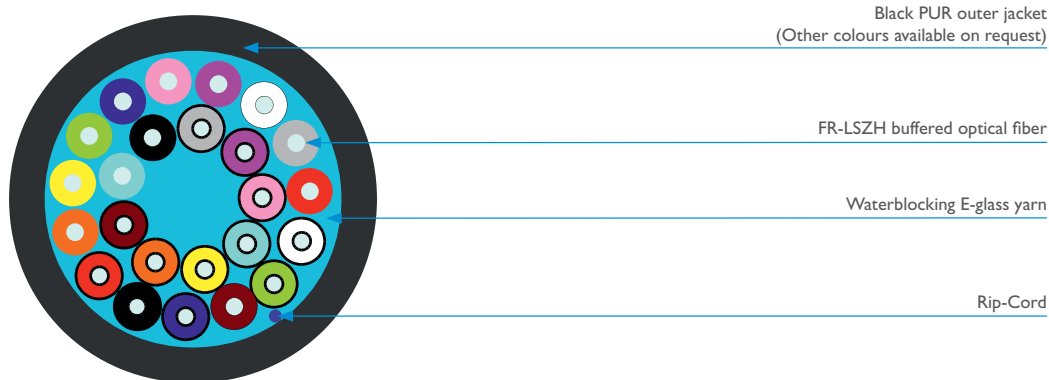
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# DISTRIBUTION

DIN CODE: J/A-VQ(BN) I IY max. 24F

ID: 5Ex7

1.3



## Mechanical and Environmental properties

Test		Method		Value/Unit
Max. tensile strength		*E1A	2F	850 N
			4F	1,200 N
			6F	1,200 N
			8F	1,500 N
			12F	2,500 N
			16F	2,700 N
			24F	3,500 N
Crush resistance		*E3		2,000 N/10 cm
Impact resistance		*E4		3 impacts (w/20 Nm)
Min. bend radius		*E11		15x cable diameter (no load)
				20x cable diameter (load)
Compound flow		*E14		30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1		-5 °C to +50 °C
				-20 °C to +60 °C
				-20 °C to +60 °C
Cable informative nominal weight (calc.)			2F	27 kg/km
			4F	33.5 kg/km
			6F	36.5 kg/km
			8F	44 kg/km
			12F	57 kg/km
			16F	73 kg/km
			24F	96 kg/km
Standard put-up length				2,100 m
Packaging				Plywood drum
Outer jacket thickness			2 – 12F	1.0 mm
			up 12F	1.2 mm
Cable maximal outer diameter			2F	5.5 ± 0.5 mm
			4F	6.0 ± 0.5 mm
			6F	6.3 ± 0.5 mm
			8F	7.3 ± 0.5 mm
			12F	8.3 ± 0.5 mm
			16F	9.5 ± 0.5 mm
			24F	11.4 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

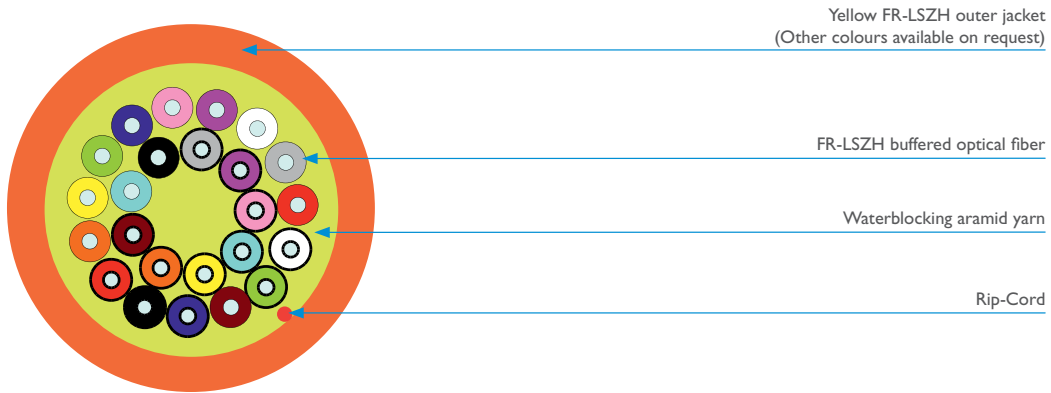
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has good cut resistance.

# DISTRIBUTION

I.3

DIN CODE: J/A-VQ(ZN)H max. 24F

ID: 5VxI



## Mechanical and Environmental properties

Test	Method	Value/Unit	
Max. tensile strength	*E1A	2F	530 N
		4F	650 N
		6F	850 N
		8 – 10F	950 N
		12F	1,100 N
		16F	1,300 N
		24F	1,600 N
Crush resistance	*E3	2,000 N/10 cm	
Impact resistance	*E4	3 impacts (w/20 Nm)	
Min. bend radius (long term)	*E11A	15x cable diameter (no load)	
Min. bend radius	*E11B	20x cable diameter (load)	
Temperature range	Installation Operation Storage	*F1	-5 °C to +50 °C
			-20 °C to +60 °C
			-20 °C to +60 °C
Cable informative nominal weight (calc.)		2F	23 kg/km
		4F	28 kg/km
		6F	33 kg/km
		8F	39 kg/km
		10F	42 kg/km
		12F	46 Kg/km
		16F	58 kg/km
24F	73 kg/km		
Standard put-up length		2,100 m; 4,100 m (± 5 %)	
Packaging		Plywood drum	
Buffer nominal diameter		0.9 mm	
Outer jacket thickness		2 – 12 F	0.8 mm
		16 – 24 F	0.9 mm
Cable outer diameter		2F	4.6 ± 0.5 mm
		4F	5.1 ± 0.5 mm
		6F	5.5 ± 0.5 mm
		8F	6.1 ± 0.5 mm
		10F	6.3 ± 0.5 mm
		12F	6.6 ± 0.5 mm
		16F	7.5 ± 0.5 mm
		24F	8.5 ± 0.5 mm

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

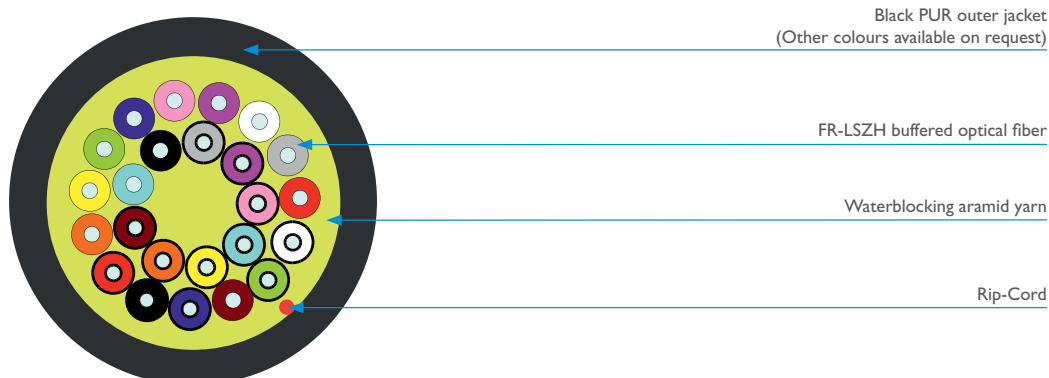
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# DISTRIBUTION

DIN CODE: J/A-VQ(ZN) I I Y max. 24F

ID: 5Vx7

1.3



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1A	2F 530 N
		4F 650 N
		6F 850 N
		8 – 10F 950 N
		12F 1,100 N
		16F 1,300 N
24F 1,600 N		
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius (long term)	*E11A	15x cable diameter (no load)
Min. bend radius	*E11B	20x cable diameter (load)
Temperature range	Installation Operation Storage	*F1 -5 °C to +50 °C
		-20 °C to +60 °C
		-20 °C to +60 °C
Cable informative nominal weight (calc.)		2F 20 kg/km
		4F 24 kg/km
		6F 29 kg/km
		8F 34 kg/km
		10F 37 kg/km
		12F 40 kg/km
		16F 51 kg/km
		24F 65 kg/km
Standard put-up length		2,100 m; 4,100 m (± 5 %)
Packaging		Plywood drum
Buffer nominal diameter		0.9 mm
Outer jacket thickness		2 – 12 F 0.8 mm
		16 – 24 F 0.9 mm
Cable outer diameter		2F 4.6 ± 0.5 mm
		4F 5.1 ± 0.5 mm
		6F 5.5 ± 0.5 mm
		8F 6.1 ± 0.5 mm
		10F 6.3 ± 0.5 mm
		12F 6.6 ± 0.5 mm
		16F 7.5 ± 0.5 mm
		24F 8.5 ± 0.5 mm
		(measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

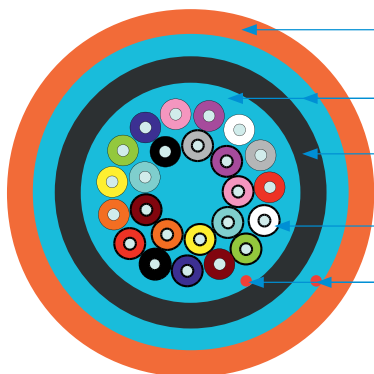
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has good cut resistance.

# DISTRIBUTION

1.3

DIN CODE: J/A-VQ(BN)HBH max. 24F

ID: 5Ex8



Yellow FR-LSZH outer jacket  
(Other colours available on request)

Waterblocking E-glass yarn

Black FR-LSZH inner jacket, UV stable

FRNC buffered optical fiber

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter	2F	8.4 ± 0.4	mm	EN 60811-1-1	
	4F	8.9 ± 0.4			
	6F	9.2 ± 0.4			
	8F	10.1 ± 0.4			
	12F	11.1 ± 0.4			
	16F	12.3 ± 0.4			
Cable weight	2F	84	kg/km	EN 60794-1-2-E1	- calculated
	4F	95			
	6F	102			
	8F	115			
	12F	135			
	16F	164			
Outer jacket thickness		1.2	mm		
Max. tensile strength	2F	2,500	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
	4F	2,800			
	6F	3,000			
	8F	3,300			
	12F	3,600			
	16F	3,800			
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
					- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E1a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		15	× OD	EN 60794-1-2-E1b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation	-5 to +50 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test
	Operation	-20 to +60 °C			
	Storage	-20 to +60 °C			

Cable life time – minimum 30 years.

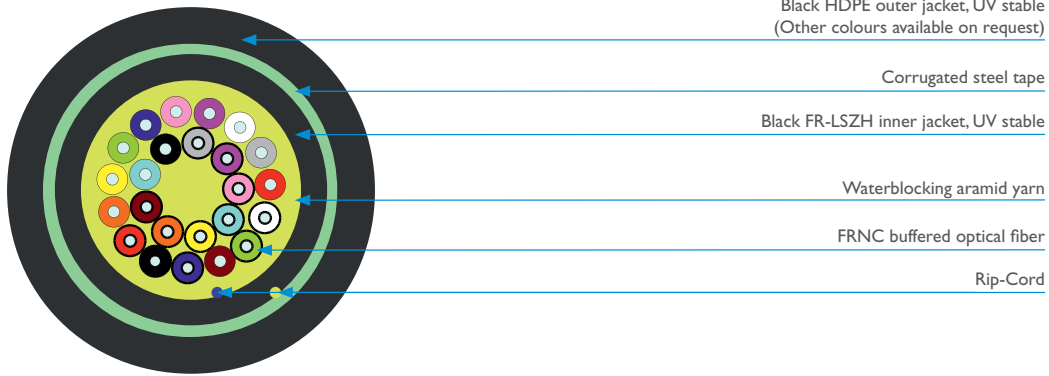
This cable is suitable for outdoor installation. The cable has increased tensile strength.

# DISTRIBUTION

DIN CODE:A-VQ(ZN)H(SR)2Y max. 24F

ID: 5Sx0

I  
1.3



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter	2 – 4F	10.5 ± 0.5	mm	EN 60811-1-1	
	6 – 10F	11.5 ± 0.5			
	12F	12.5 ± 0.5			
	16F	13.5 ± 0.5			
	20F	14.5 ± 0.5			
	24F	15.5 ± 0.5			
Cable weight	2F	111	kg/km		- calculated
	4F	116			
	6F	133			
	8F	137			
	10F	140			
	12F	154			
	16F	183			
	24F	218			
Outer jacket thickness		1.5 ± 0.2	mm		
Buffer nominal diameter		0.9	mm		
Max. tensile strength	2 – 4F	800	N		- max. attenuation variation ≤ 0.1 dB at 1,550 nm
	6 – 12F	1,200			
	16F	1,400			
	20F	1,700			
	24F	2,000			
Crush resistance test		5,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Temperature range	Installation	-5 to +50 °C -20 to +60 °C -20 to +60 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation
	Operation				
	Storage				

Cable life time – minimum 30 years.

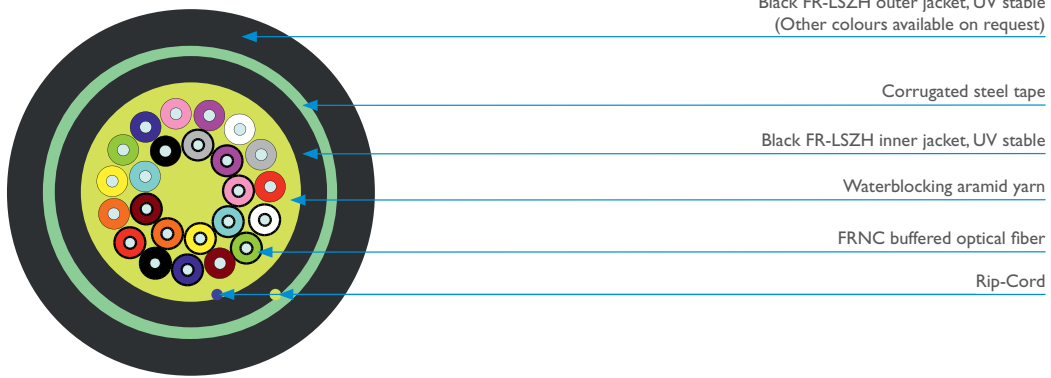
This cable is suitable for dry outdoor use. The cable has full rodent protection, direct burial possible.

# DISTRIBUTION

1.3

DIN CODE: J/A-VQ(ZN)H(SR)H max. 24F

ID: 5SxI



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter	2 – 4F	10.5 ± 0.5	mm	EN 60811-1-1	
	6 – 10F	11.5 ± 0.5			
	12F	12.5 ± 0.5			
	16F	13.5 ± 0.5			
	20F	14.5 ± 0.5			
	24F	15.5 ± 0.5			
Cable weight	2F	138	kg/km		- calculated
	4F	143			
	6F	163			
	8F	168			
	10F	170			
	12F	188			
	16F	219			
	20F	239			
Outer jacket thickness		1.5 ± 0.2	mm		
Buffer nominal diameter		0.9	mm		
Max. tensile strength	2 – 4F	800	N		- max. attenuation variation ≤ 0.1 dB at 1,550 nm
	6 – 12F	1,200			
	16F	1,400			
	20F	1,700			
	24F	2,000			
Crush resistance test		5,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Temperature range	Installation Operation Storage	-5 to +50 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation
		-20 to +60 °C			
		-20 to +60 °C			

Cable life time – minimum 30 years.

This cable is suitable for indoor or dry outdoor use. The cable has full rodent protection, direct burial possible.

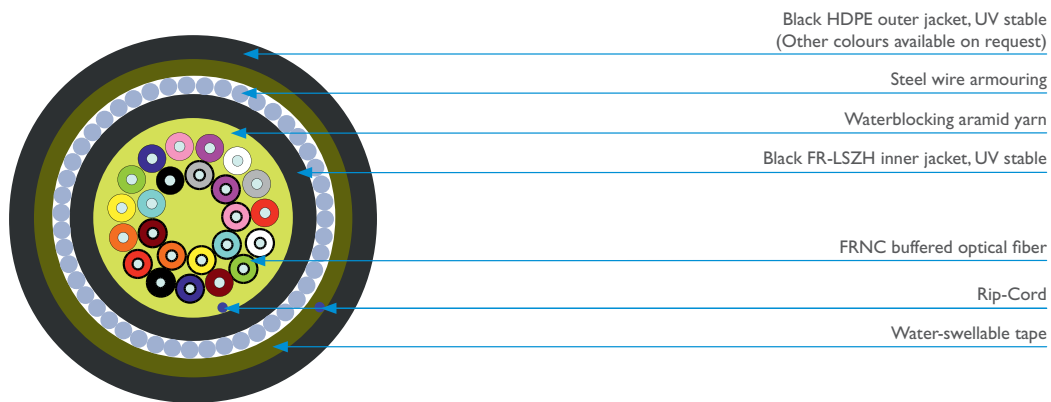


# DISTRIBUTION

DIN CODE: A-V(ZN)HB2Y max. 24F

ID: 5Ax5

1.3



## Mechanical and Environmental properties

Test	Method	Value/Unit	
Max. tensile strength	*E1A	2F	4,000 N
		4 – 6F	5,000 N
		8 – 10F	5,500 N
		12F	6,000 N
		16F	7,000 N
		20F	7,500 N
		24F	8,000 N
Crush resistance	*E3	2,000 N/10 cm	
Impact resistance	*E4	3 impacts (w/20 Nm)	
Min. bend radius (long term)	*E11A	10x cable diameter (no load)	
Min. bend radius	*E11B	15x cable diameter (load)	
Temperature range	Installation Operation Storage	*F1	-5 °C to +50 °C
			-20 °C to +60 °C
			-20 °C to +60 °C
Cable informative nominal weight (calc.)		2F	141 kg/km
		4F	152 kg/km
		6F	166 kg/km
		8F	177 kg/km
		10F	183 kg/km
		12F	194 kg/km
		16F	245 kg/km
		20F	259 kg/km
		24F	281 kg/km
Standard put-up length		2,100 m	
Packaging		Plywood drum	
Buffer nominal diameter		0.9 mm	
Outer jacket thickness		10.1 – 1.5 mm	
Cable outer diameter		2F	10.1 ± 0.5 mm
		4F	10.5 ± 0.5 mm
		6F	11.0 ± 0.5 mm
		8F	11.4 ± 0.5 mm
		10F	11.5 ± 0.5 mm
		12F	11.9 ± 0.5 mm
		16F	13.8 ± 0.5 mm
		20F	14.1 ± 0.5 mm
		24F	14.8 ± 0.5 mm

\*IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

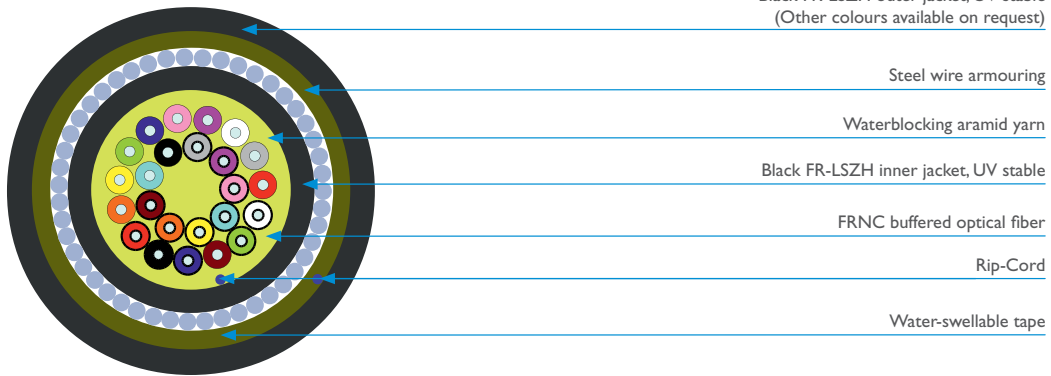
Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable is suitable for direct burial possible.

# DISTRIBUTION

1.3

DIN CODE: J/A-V(ZN)HBH max. 24F

ID: 5Ax4



## Mechanical and Environmental properties

Test		Method		Value/Unit
Max. tensile strength		*E1A	2F	4,000 N
			4 – 6F	5,000 N
			8 – 10F	5,500 N
			12F	6,000 N
			16F	7,000 N
			20F	7,500 N
			24F	8,000 N
Crush resistance		*E3		2,000 N/10 cm
Impact resistance		*E4		3 impacts (w/20 Nm)
Min. bend radius (long term)		*E11A		10x cable diameter (no load)
Min. bend radius		*E11B		15x cable diameter (load)
Temperature range	Installation Operation Storage	*F1		-5 °C to +50 °C
				-20 °C to +60 °C
				-20 °C to +60 °C
Cable informative nominal weight (calc.)			2F	141 kg/km
			4F	152 kg/km
			6F	166 kg/km
			8F	177 kg/km
			10F	183 kg/km
			12F	194 kg/km
			16F	245 kg/km
			20F	259 kg/km
			24F	281 kg/km
Standard put-up length				2,100 m
Packaging				Plywood drum
Buffer nominal diameter				0.9 mm
Outer jacket thickness				10.1 – 1.5 mm
Cable outer diameter			2F	10.1 ± 0.5 mm
			4F	10.5 ± 0.5 mm
			6F	11.0 ± 0.5 mm
			8F	11.4 ± 0.5 mm
			10F	11.5 ± 0.5 mm
			12F	11.9 ± 0.5 mm
			16F	13.8 ± 0.5 mm
			20F	14.1 ± 0.5 mm
			24F	14.8 ± 0.5 mm
				(measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

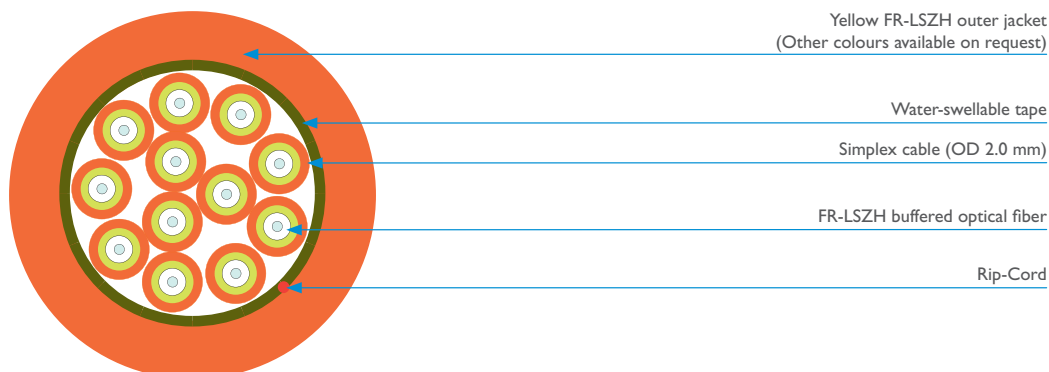
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable is suitable for direct burial possible.

# BREAKOUT

DIN CODE: J-V(ZN)HH max. 48F, Breakout 2.0 mm

ID: 82T I, 82F I

1.4



The picture represents a cable with 12 fibers. By number fibers with Central Strength Member.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter	4×2.0	7.4 ± 0.4	mm	EN 60811-1-1	
	6×2.0	8.4 ± 0.4			
	8×2.0	9.7 ± 0.4			
	12×2.0	10.8 ± 0.4			
	16×2.0	11.8 ± 0.4			
	24×2.0	14.3 ± 0.4			
	48×2.0	18.7 ± 0.4			
Cable weight	4×2.0	53	kg/km		- calculated
	6×2.0	70			
	8×2.0	90			
	12×2.0	106			
	16×2.0	131			
	24×2.0	190			
	48×2.0	312			
Outer jacket thickness		1.0 ± 0.2	mm		
Unit diameter		2	mm		
Max. tensile strength		300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 10 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		15	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Temperature range	Installation Operation Storage	-5 to +50 °C -20 to +60 °C -20 to +60 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

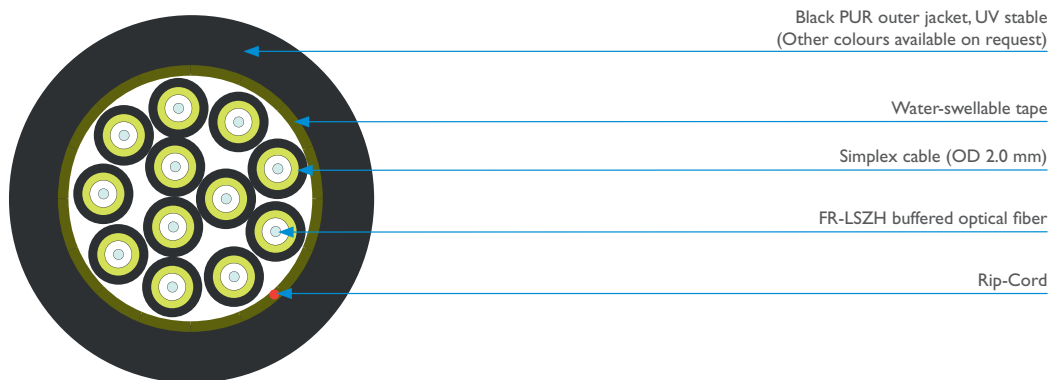
Cable life time – minimum 30 years. This cable is suitable for indoor use.

# BREAKOUT

1.4

DIN CODE: J-V(ZN)11Y11Y max. 48F, Breakout 2.0 mm

ID: 82T7, 82F7



The picture represents a cable with 12 fibers. By number fibers with Central Strength Member.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter	4×2.0	7.4 ± 0.4	mm	EN 60811-1-1	
	6×2.0	8.4 ± 0.4			
	8×2.0	9.7 ± 0.4			
	12×2.0	10.8 ± 0.4			
	16×2.0	11.8 ± 0.4			
	24×2.0	14.3 ± 0.4			
	48×2.0	18.7 ± 0.4			
Cable weight	4×2.0	42	kg/km		- calculated
	6×2.0	56			
	8×2.0	73			
	12×2.0	85			
	16×2.0	105			
	24×2.0	154			
	48×2.0	252			
Outer jacket thickness		1.0 ± 0.2	mm		
Unit diameter		2	mm		
Max. tensile strength		300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 10 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		15	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Temperature range	Installation Operation Storage	-5 to +50 °C -20 to +60 °C -20 to +60 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

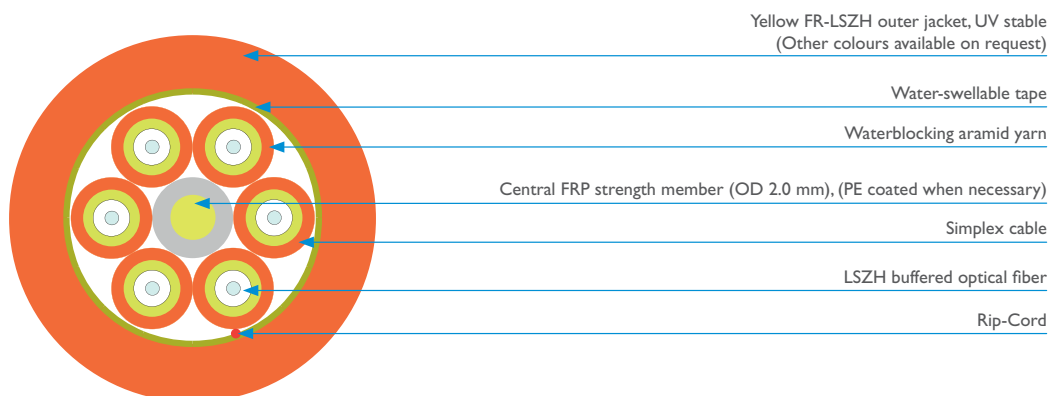
Cable life time – minimum 30 years. This cable is suitable for indoor use.

# BREAKOUT

DIN CODE: J-V(ZN)HH max. 48F, Breakout 2.0 mm

ID: 42T I, 42F I

1.4



The picture represents a cable with 6 optical fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	4×2.0	7.4 ± 0.4	mm	EN 60811-1-1
	6×2.0	8.4 ± 0.4		
	8×2.0	9.7 ± 0.4		
	12×2.0	12.2 ± 0.4		
	16×2.0	12.0 ± 0.4		
	18×2.0	12.4 ± 0.4		
	24×2.0	14.3 ± 0.4		
	48×2.0	19.0 ± 0.4		
Cable weight	2×2.0	50	kg/km	- calculated
	4×2.0	55		
	6×2.0	74		
	8×2.0	96		
	12×2.0	144		
	16×2.0	137		
	18×2.0	151		
	48×2.0	336		
Outer jacket thickness	1.0	mm		
Simplex diameter	2.0	mm		
Max. tensile strength	2×2.0	500	N	EN 60794-1-2-E1
	4×2.0	800		
	6×2.0	1,800		
	8×2.0	2,400		
	12×2.0	3,000		
	16×2.0	3,400		
	18×2.0	3,700		
	48×2.0	5,000		
Crush resistance test	1,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)	10	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)	15	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Temperature range	Installation Operation Storage	-5 to +50 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation
		-20 to +60 °C		
		-20 to +60 °C		

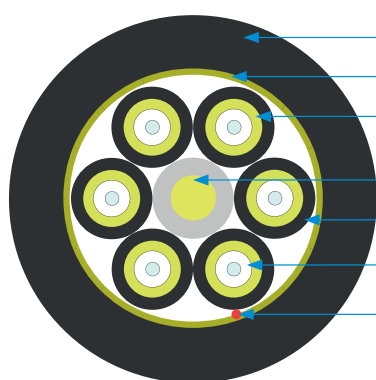
Cable life time – minimum 30 years. This cable is suitable for outdoor installation. The cable has increased tensile strength.

# BREAKOUT

1.4

DIN CODE: J-V(ZN)IIYIIY max. 48F, Breakout 2.0 mm

ID: 42T7, 42F7



Black PUR outer jacket  
(Other colours available on request)

Water-swellable tape

Waterblocking aramid yarn

Central FRP strength member (OD 2.0 mm), (PE coated when necessary)

Simplex cable

LSZH buffered optical fiber

Rip-Cord

The picture represents a cable with 6 optical fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment	
Cable outer diameter	4×2.0	7.4 ± 0.4	mm	EN 60811-1-1	
	6×2.0	8.4 ± 0.4			
	8×2.0	9.7 ± 0.4			
	12×2.0	12.2 ± 0.4			
	16×2.0	12.0 ± 0.4			
	18×2.0	12.4 ± 0.4			
	24×2.0	14.3 ± 0.4			
	36×2.0	16.4 ± 0.4			
	48×2.0	19.0 ± 0.4			
Cable weight	2×2.0	46	kg/km	- calculated	
	4×2.0	49			
	6×2.0	67			
	8×2.0	86			
	12×2.0	131			
	16×2.0	121			
	18×2.0	133			
	24×2.0	173			
	36×2.0	220			
48×2.0	291				
Outer jacket thickness	1.0	mm			
Simplex diameter	2.0	mm			
Max. tensile strength	2×2.0	500	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
	4×2.0	800			
	6×2.0	1,800			
	8×2.0	2,400			
	12×2.0	3,000			
	16×2.0	3,400			
	18×2.0	3,700			
	24×2.0	4,000			
	36×2.0	4,600			
48×2.0	5,000				
Crush resistance test	1,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.	
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm	
Min. bend radius (no load)	10	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm	
Min. bend radius (load)	15	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm	
Temperature range	Installation	-5 to +50 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation	
	Operation	-20 to +60 °C			
	Storage	-20 to +60 °C			

Cable life time – minimum 30 years.

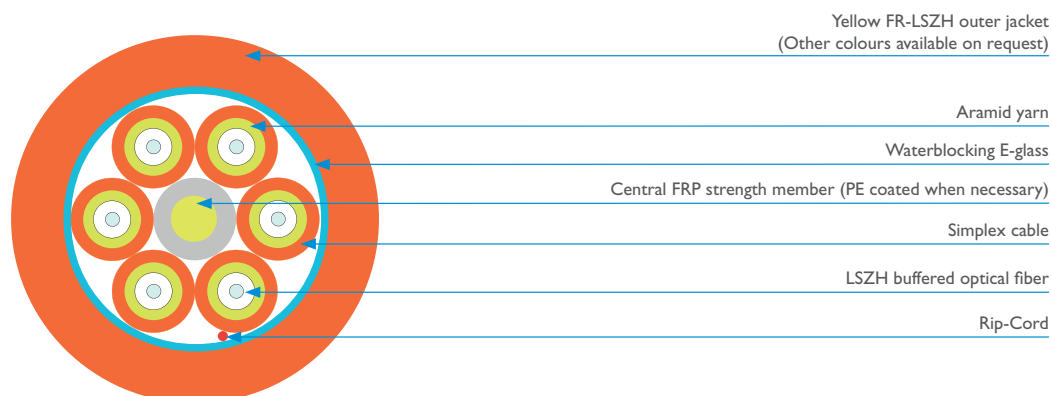
This cable is suitable for indoor use. The cable has low abrasion and good cut and chemical resistance.

# BREAKOUT

DIN CODE: J-V(ZN)H(BN)H max. 24F, Breakout 2.4 mm

ID: 44xI

1.4



The picture represents a cable with 6 fibers.

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1A	4F 400 N
		6F 750 N
		8F 2,000 N
		12F 2,500 N
		16F 2,700 N
		18F 3,500 N
24F 4,000 N		
Crush resistance	*E3	1,500 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11A	10x cable diameter (no load)
	*E11B	15x cable diameter (load)
Temperature range	Installation Operation Storage	*F1 -5 °C to +50 °C
		-5 °C to +60 °C
		-5 °C to +60 °C
Cable informative nominal weight (calc.)		2F 62 kg/km
		4F 67 kg/km
		6F 96 kg/km
		8F 123 kg/km
		12F 190 kg/km
		16F 178 kg/km
18F 201 kg/km		
24F 263 kg/km		
Standard put-up length		2,100 m
Packaging		Plywood drum
Buffer nominal diameter		0.9 ± 0.05 mm
Simplex nominal diameter		2.4 ± 0.1 mm
Outer jacket thickness		0.9 – 1.2 mm
Cable diameter		4F 8.2 ± 0.4 mm
		6F 9.7 ± 0.4 mm
		8F 11.2 ± 0.4 mm
		12F 14.2 ± 0.4 mm
		16F 13.7 ± 0.4 mm
		18F 14.5 ± 0.4 mm
24F 16.8 ± 0.4 mm		

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor use.







## 2. DUCT CABLES

- 2.1 STANDARD CLT
- 2.2 STANDARD MLT
- 2.3 DURABLE CLT
- 2.4 DURABLE MLT

# CLT DUCT STANDARD

DIN CODE:A-DQ(BN)2Y 1× 2.5 max. 12F

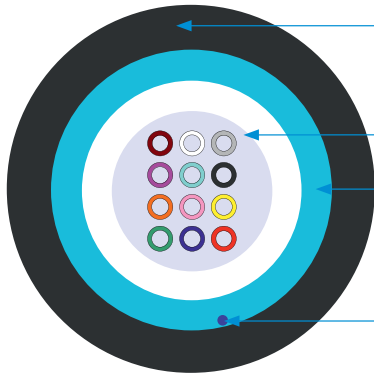
ID:AE01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking E-glass

Rip-Cord



2

2.1

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	1,100 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Coefficient of friction			0.13
Temperature range	Installation	*F1	-15 °C to +50 °C
	Operation		-20 °C to +70 °C
	Storage		-20 °C to +70 °C
Cable informative nominal weight (calc.)			27.5 kg/km
Standard put-up length			2,100 m; 4,100 m (± 5 %)
Packaging			Plywood drum
Loose tube diameter			2.5 mm
Outer jacket thickness			1.0 ± 0.2 mm
Cable outer diameter			5.4 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

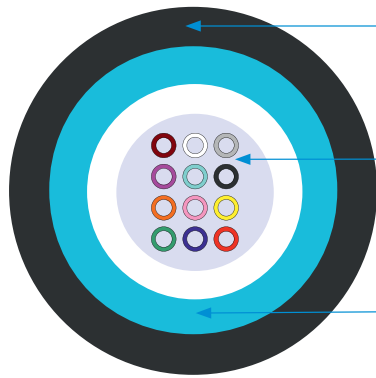
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor installation.

# CLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 1 × 2.5 max. 12F

ID:AE02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking E-glass yarn

2

2.1

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	1,100 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -20 °C to +70 °C -20 °C to +70 °C
Cable informative nominal weight (calc.)			35.5 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			2.5 mm
Outer jacket thickness			1.0 ± 0.2 mm
Cable outer diameter			5.4 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor installation.

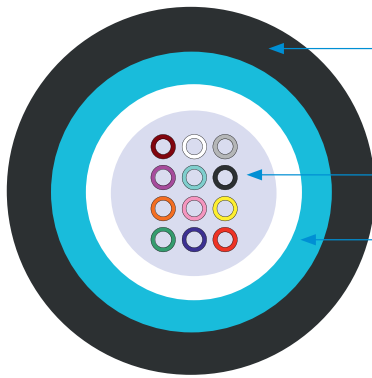
# CLT DUCT STANDARD

DIN CODE:A-DQ(BN)4Y 1× 2.3 max. 12F

ID:AE04

2

2.1



Black PA outer jacket  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking E-glass

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	500 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/15 Nm)
Min. bend radius		*E11a	10× cable diameter (no load)
		*E11b	15× cable diameter (load)
Moisture resistance			passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation		-15 °C to +50 °C
	Operation	*F1	-20 °C to +70 °C
	Storage		-20 °C to +70 °C
Cable informative nominal weight (calc.)			20 kg/km
Standard put-up length			2,100 m
Packaging			Plywood drum
Loose tube diameter			2.3 mm
Outer jacket thickness			0.7 ± 0.2 mm
Cable outer diameter			4.3 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

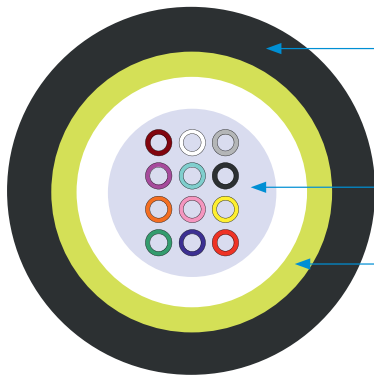
Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, for air blowing.

# CLT DUCT STANDARD

DIN CODE:A-DQ(ZN)2Y 1× 2.5 max. 12F

ID:AA01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking aramid yarn

2

2.1

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	400 N
Crush resistance	*E3	1,000 N/10 cm
Impact resistance	*E4	3 impacts (w/10 Nm)
Min. bend radius	*E11a	10× cable diameter (no load)
	*E11b	15× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow		30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C -20 °C to +70 °C -20 °C to +70 °C
Cable informative nominal weight (calc.)		18 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.5 mm
Outer jacket thickness		0.9 ± 0.2 mm
Cable outer diameter		4.5 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

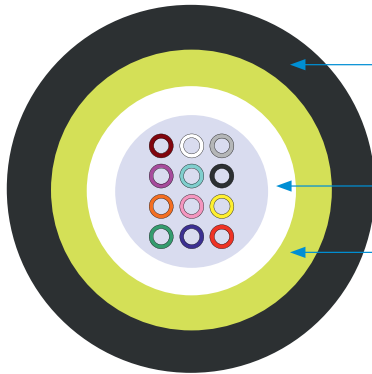
# CLT DUCT STANDARD

DIN CODE: J/A-DQ(ZN)H 1 × 2.5 max. 12F

ID: AA02

2

2.1



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking aramid yarn

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1 a	400 N
Crush resistance		*E3	1,000 N/10 cm
Impact resistance		*E4	3 impacts (w/10 Nm)
Min. bend radius		*E11 a	10× cable diameter (no load)
		*E11 b	15× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow			30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -20 °C to +70 °C -20 °C to +70 °C
Cable informative nominal weight (calc.)			24 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			2.5 mm
Outer jacket thickness			0.9 ± 0.2 mm
Cable outer diameter			4.5 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

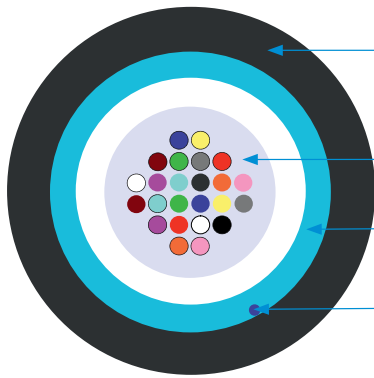
Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# CLT DUCT STANDARD

DIN CODE:A-DQ(BN)2Y 1× 3.0 max. 24F

ID: BE01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking E-glass

Rip-Cord

2

2.1

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	1,100 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow			30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-5 °C to +50 °C -20 °C to +70 °C -20 °C to +70 °C
Cable informative nominal weight (calc.)			31 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			3.0 mm
Outer jacket thickness			1.0 ± 0.2 mm
Cable outer diameter			5.8 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

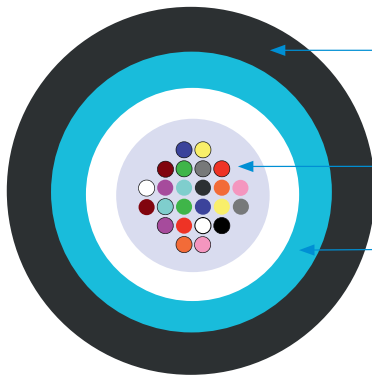
# CLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 1 × 3.0 max. 24F

ID: BE02

2

2.1



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking E-glass yarn

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	1,100 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	-15 °C to +50 °C
		-20 °C to +70 °C
		-20 °C to +70 °C
Cable informative nominal weight (calc.)		49 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		3.0 mm
Outer jacket thickness		1.3 ± 0.3 mm
Cable outer diameter		6.4 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

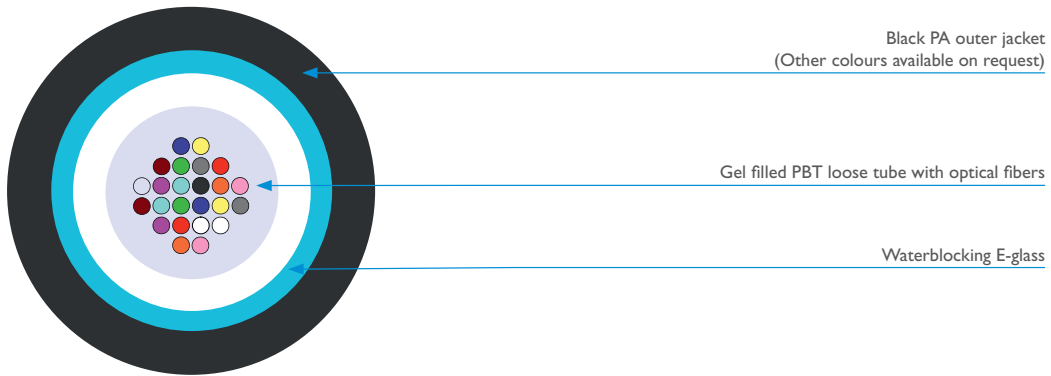
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor installation.



# CLT DUCT STANDARD

DIN CODE:A-DQ(BN)4Y 1× 3.0 max. 24F

ID: BE04



2

2.1

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	600 N
Crush resistance		*E3	1,000 N/10 cm
Impact resistance		*E4	3 impacts (w/15 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	25× cable diameter (load)
Moisture resistance		*F5	passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +40 °C -20 °C to +70 °C -20 °C to +70 °C
Cable informative nominal weight (calc.)			30 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			3.0 mm
Outer jacket thickness			1.0 (min. 0.8) mm
Cable outer diameter			5.5 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, for air blowing.

# CLT DUCT STANDARD

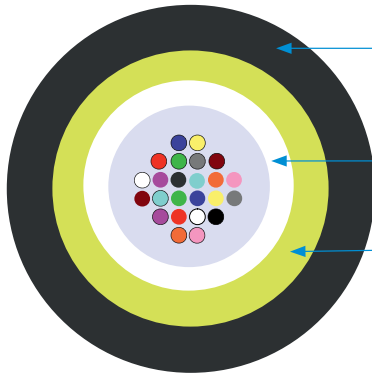
DIN CODE:A-DQ(ZN)2Y 1× 3.0 max. 24F

ID: BA01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking aramid yarn



2

2.1

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	600 N
Crush resistance		*E3	1,500 N/10 cm
Impact resistance		*E4	3 impacts (w/10 Nm)
Min. bend radius		*E11a	10× cable diameter (no load)
		*E11b	15× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation	*F1	-15 °C to +50 °C
	Operation		-20 °C to +70 °C
	Storage		-20 °C to +70 °C
Cable informative nominal weight (calc.)			23 kg/km
Standard put-up length			2,100 m
Packaging			Plywood drum
Loose tube diameter			3.2 mm
Outer jacket thickness			0.9 ± 0.2 mm
Cable outer diameter			5.1 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

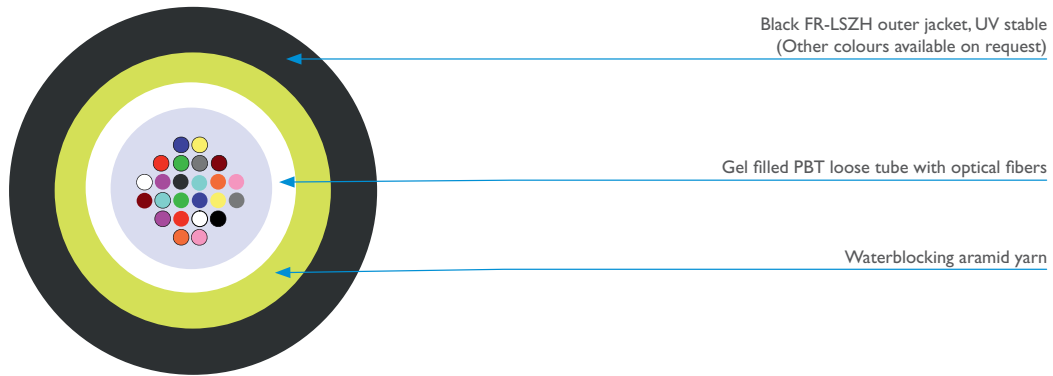
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# CLT DUCT STANDARD

DIN CODE: J/A-DQ(ZN)H 1 × 3.0 max. 24F

ID: BA02



2

2.1

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1 a	600 N
Crush resistance	*E3	1,500 N/10 cm
Impact resistance	*E4	3 impacts (w/10 Nm)
Min. bend radius	*E11 a	10× cable diameter (no load)
	*E11 b	15× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-20 °C to +60 °C
		-20 °C to +70 °C
Cable informative nominal weight (calc.)		31 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		3.2 mm
Outer jacket thickness		0.9 ± 0.2 mm
Cable outer diameter		5.1 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

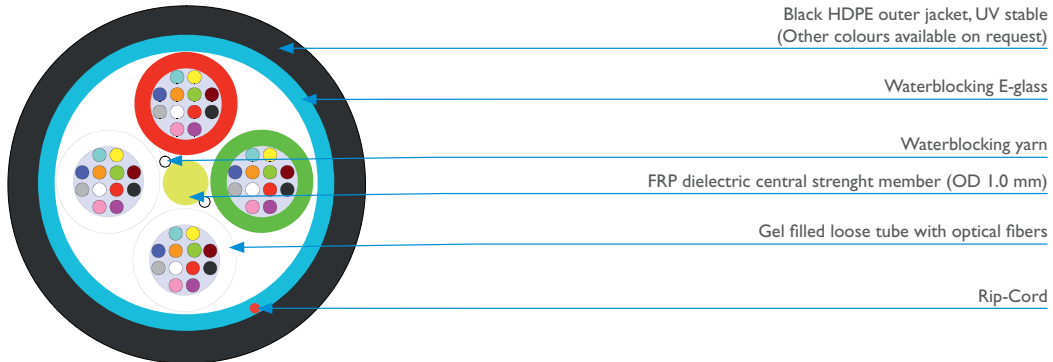
# MLT DUCT STANDARD

DIN CODE: A-DQ(BN)2Y 4× 2.3 max. 48F

ID: LE01

2

2.2



## Mechanical and Environmental properties

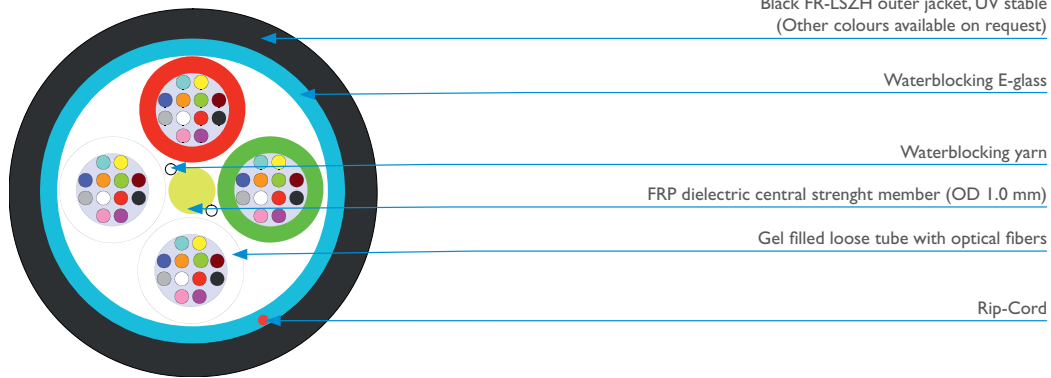
Test		Value	Unit	Method	Comment
Cable outer diameter		8.9 ± 0.4	mm	EN 60811-1-1	
Cable weight		64	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		1,400	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 120 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use, direct burial possible.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 4× 2.3 max. 48F

ID: LE02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

Waterblocking yarn

FRP dielectric central strenght member (OD 1.0 mm)

Gel filled loose tube with optical fibers

Rip-Cord

2

2.2

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	8.9 ± 0.4	mm	EN 60811-1-1	
Cable weight	86	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	1,400	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 120 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

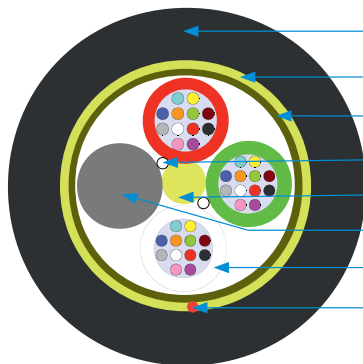
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(ZN)2Y 4× 2.3 max. 48F

ID: LA01

2  
2.2



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking aramid

Water-swellable tape

Waterblocking yarn

FRP dielectric central strength member (OD 1.0 mm)

PE filler

Gel filled loose tube with optical fibers

Rip-Cord

The picture represents a cable with 36 fibers.

## Mechanical and Environmental properties

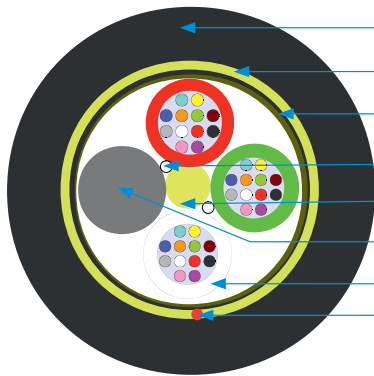
Test		Value	Unit	Method	Comment
Cable outer diameter		9.1 ± 0.4	mm	EN 60811-1-1	
Cable weight		64	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		1,600	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 570 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- no increase attenuation after the test
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(ZN)H 4× 2.3 max. 48F

ID: LA02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking aramid yarn

Water-swellaable tape

Waterblocking yarn

FRP dielectric central strenght member (OD 1.0 mm)

PE filler

Gel filled loose tube with optical fibers

Rip-Cord

The picture represents a cable with 36 fibers.

2

2.2

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		9.1 ± 0.4	mm	EN 60811-1-1	
Cable weight		85	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		1,600	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 570 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(BN)2Y 5× 1.7 max. 60F

ID: UE01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

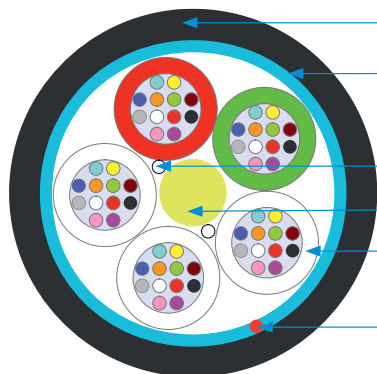
Waterblocking E-glass yarn

Waterblocking yarn

FRP dielectric central strength member (OD 1.3 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord



2

2.2

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		7.8 ± 0.4	mm	EN 60811-1-1	
Cable weight		56	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		1,300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

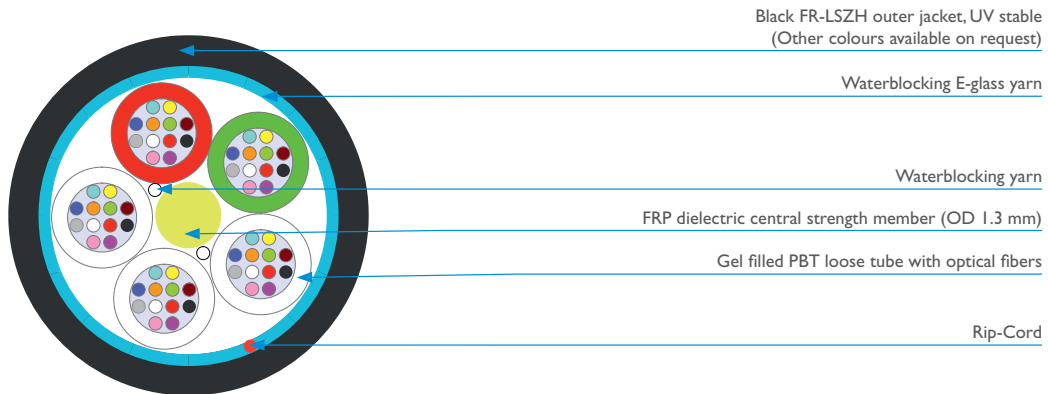
Cable life time – minimum 30 years. This cable is suitable for outdoor use.



# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 5× 1.7 max. 60F

ID: UE02



2

2.2

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	7.8 ± 0.4	mm	EN 60811-1-1	
Cable weight	74	kg/km		- calculated
Outer jacket thickness	1.5 ± 0.2	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	1,300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.5 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - dwell time acc. to EN 60794-1-22-F1 - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(BN)2Y 6× 1.7 max. 72F

ID: CE01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

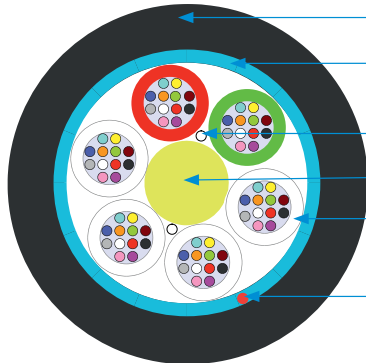
Waterblocking E-glass yarn

Waterblocking yarn

FRP dielectric central strength member (OD 1.7 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord



2

2.2

## Mechanical and Environmental properties

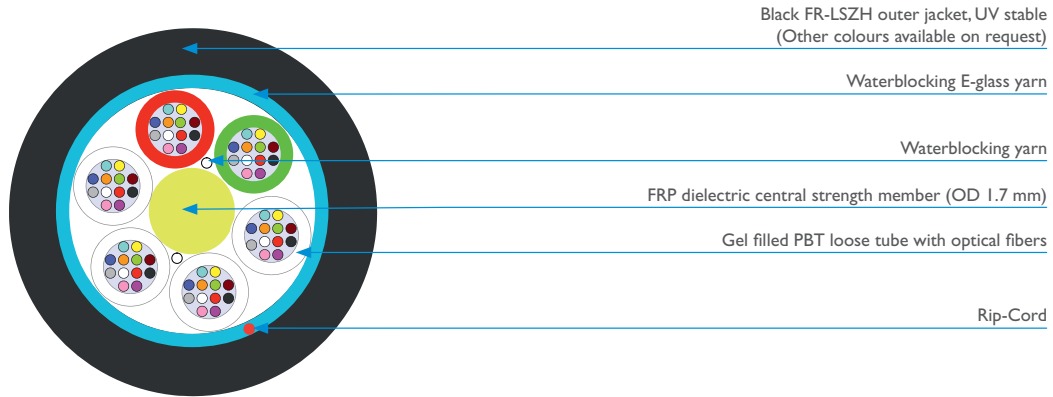
Test		Value	Unit	Method	Comment
Cable outer diameter		8.2 ± 0.4	mm	EN 60811-1-1	
Cable weight		64	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		1,900	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 6× 1.7 max. 72F

ID: CE02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass yarn

Waterblocking yarn

FRP dielectric central strength member (OD 1.7 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord

2

2.2

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		8.2 ± 0.4	mm	EN 60811-1-1	
Cable weight		83	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		1.7	mm		
Max. allowable tension		1,900	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.5 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - dwell time acc. to EN 60794-1-22-F1 - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(BN)2Y 6× 2.3 max. 72F

ID: FE01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass yarn

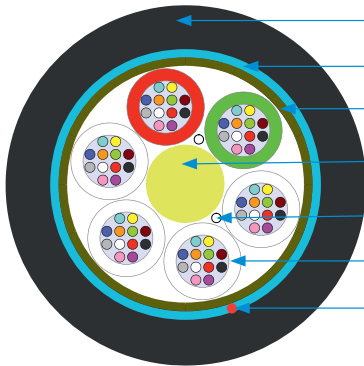
Water-swellaable tape

FRP dielectric central strength member (OD 2.5 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord



2

2.2

## Mechanical and Environmental properties

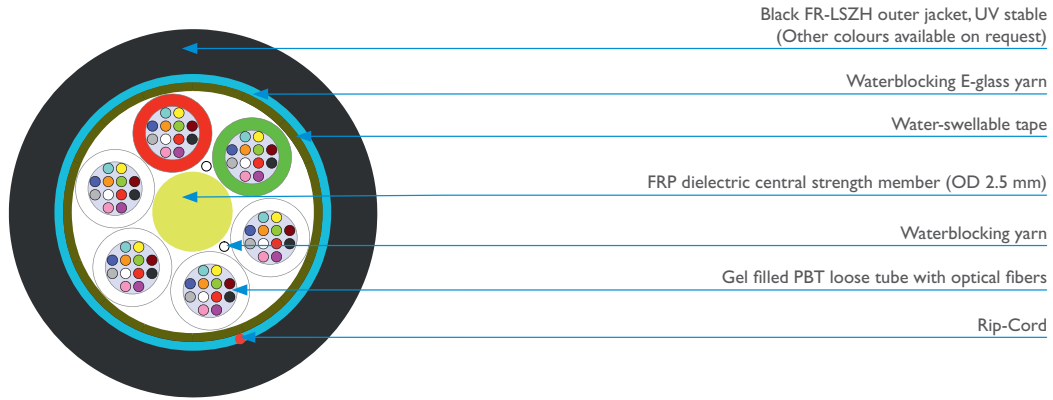
Test		Value	Unit	Method	Comment
Cable outer diameter		10.6 ± 0.4	mm	EN 60811-1-1	
Cable weight		90	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		2,700	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 6× 2.3 max. 72F

ID: FE02



2

2.2

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		10.6 ± 0.4	mm	EN 60811-1-1	
Cable weight		117	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		2,700	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(ZN)2Y 6× 2.3 max. 72F

ID: FA01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking aramid yarn

Water-swellaible tape

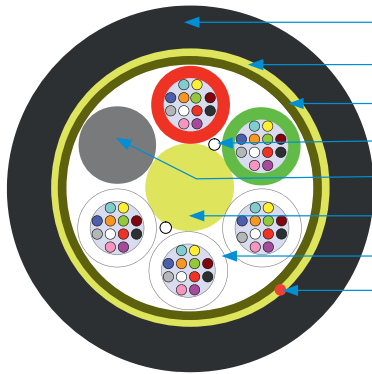
Waterblocking yarn

PE filler

FRP dielectric central strength member (OD 2.5 mm)

PBT loose tube with optical fibers

Rip-Cord



The picture represents a cable with 60 fibers.

2

2.2

## Mechanical and Environmental properties

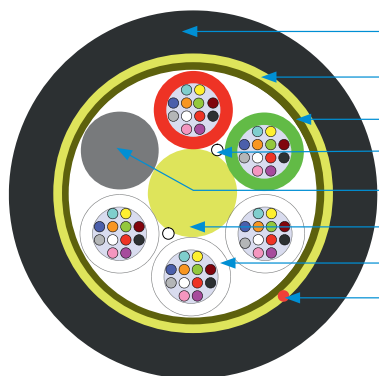
Test		Value	Unit	Method	Comment
Cable outer diameter		10.6 ± 0.4	mm	EN 60811-1-1	
Cable weight		91	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		3,300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,600 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(ZN)H 6× 2.3 max. 72F

ID: FA02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking aramid yarn

Water-swellaable tape

Waterblocking yarn

PE filler

FRP dielectric central strength member (OD 2.5 mm)

PBT loose tube with optical fibers

Rip-Cord

The picture represents a cable with 60 fibers.

2

2.2

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	10.6 ± 0.4	mm	EN 60811-1-1	
Cable weight	1.15	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	3,300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,600 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

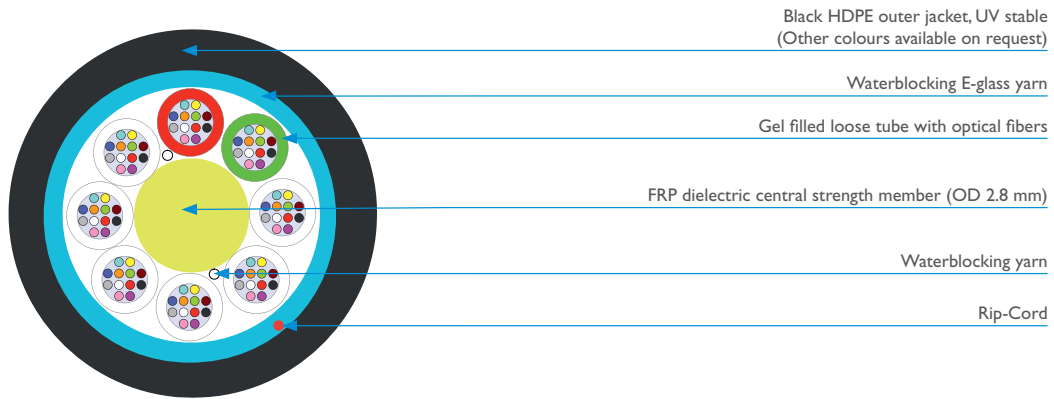
# MLT DUCT STANDARD

DIN CODE: A-DQ(BN)2Y 8× 1.7 max. 96F

ID: PE01

2

2.2



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		9.6 ± 0.4	mm	EN 60811-1-1	
Cable weight		86	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		4,500	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 2,700 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

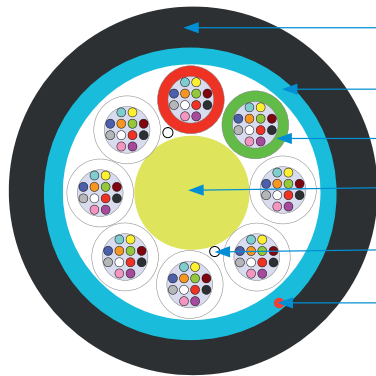
Cable life time – minimum 30 years. This cable is suitable for outdoor use.



# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 8× 1.7 max. 96F

ID: PE02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass yarn

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 2.8 mm)

Waterblocking yarn

Rip-Cord

2

2.2

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		9.6 ± 0.4	mm	EN 60811-1-1	
Cable weight		109	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		1.7	mm		
Max. allowable tension		4,500	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 2,700 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.5 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - dwell time acc. to EN 60794-1-22-F1 - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(BN)2Y 8x 2.3 max. 96F

ID: GE01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass yarn

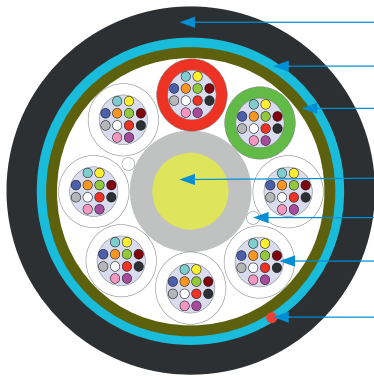
Water-swellaable tape

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 3.8 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord



2

2.2

## Mechanical and Environmental properties

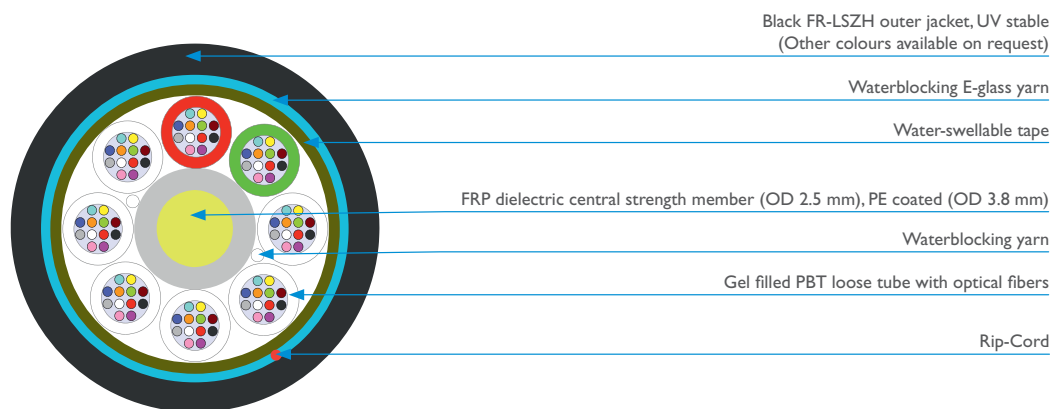
Test		Value	Unit	Method	Comment
Cable outer diameter		11.9 ± 0.4	mm	EN 60811-1-1	
Cable weight		114	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		3,400	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 1,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 8× 2.3 max. 96F

ID: GE02



2  
2.2

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	11.9 ± 0.4	mm	EN 60811-1-1	
Cable weight	145	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	3,400	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 1,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(ZN)2Y 8× 2.3 max. 96F

ID: GA01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking aramid yarn

Water-swellaable tape

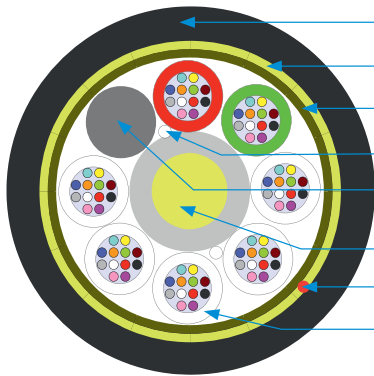
Waterblocking yarn

PE filler

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 3.8 mm)

Rip-Cord

Gel filled PBT loose tube with optical fibers



2

2.2

## Mechanical and Environmental properties

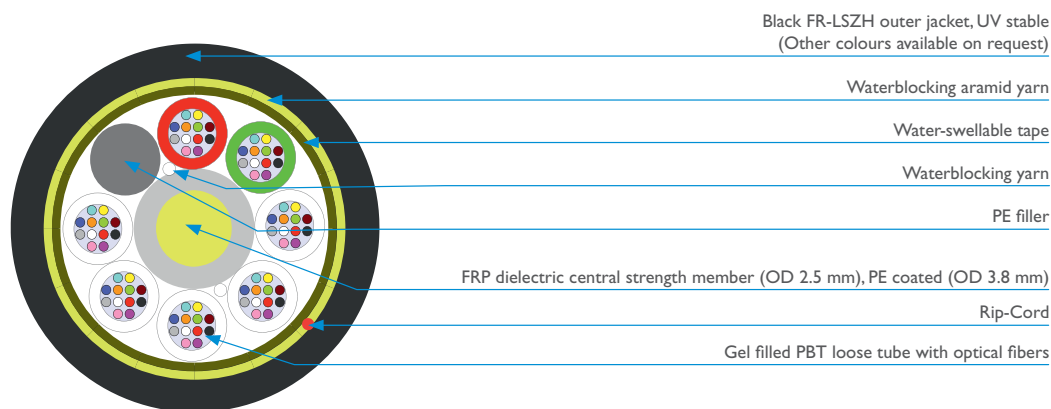
Test		Value	Unit	Method	Comment
Cable outer diameter		11.9 ± 0.4	mm	EN 60811-1-1	
Cable weight		113	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		3,800	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 2,300 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(ZN)H 8× 2.3 max. 96F

ID: GA02



2  
2.2

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	11.9 ± 0.4	mm	EN 60811-1-1	
Cable weight	140	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	3,800	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 2,300 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(BN)2Y 12× 1.7 max. 144F

ID: RE01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

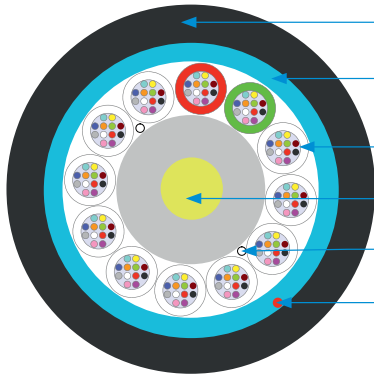
Waterblocking E-glass yarn

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 5.0 mm)

Waterblocking yarn

Rip-Cord



2

2.2

## Mechanical and Environmental properties

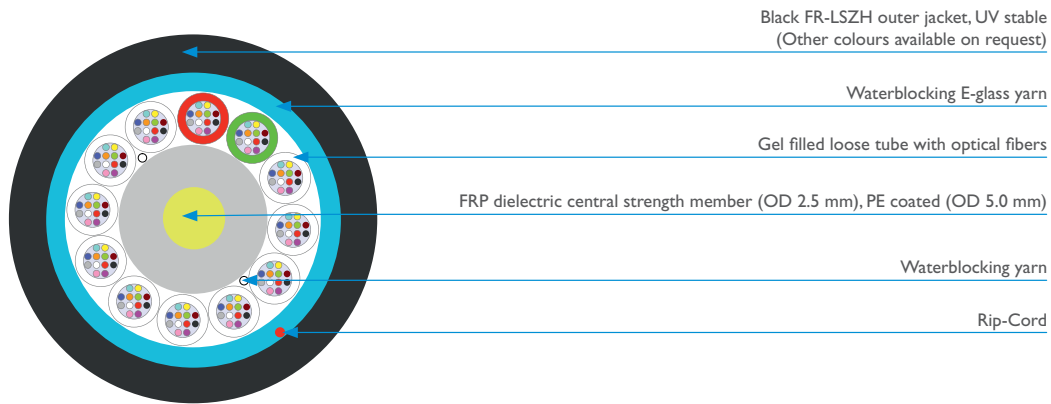
Test		Value	Unit	Method	Comment
Cable outer diameter		11.8 ± 0.5	mm	EN 60811-1-1	
Cable weight		125	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		9,500	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 6,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 12× 1.7 max. 144F

ID: RE02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass yarn

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 5.0 mm)

Waterblocking yarn

Rip-Cord

2

2.2

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	11.8 ± 0.5	mm	EN 60811-1-1	
Cable weight	154	kg/km		- calculated
Outer jacket thickness	1.5 ± 0.2	mm		
Loose tube diameter	1.7	mm		
Max. allowable tension	9,500	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 6,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.5 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - dwell time acc. to EN 60794-1-22-F1 - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

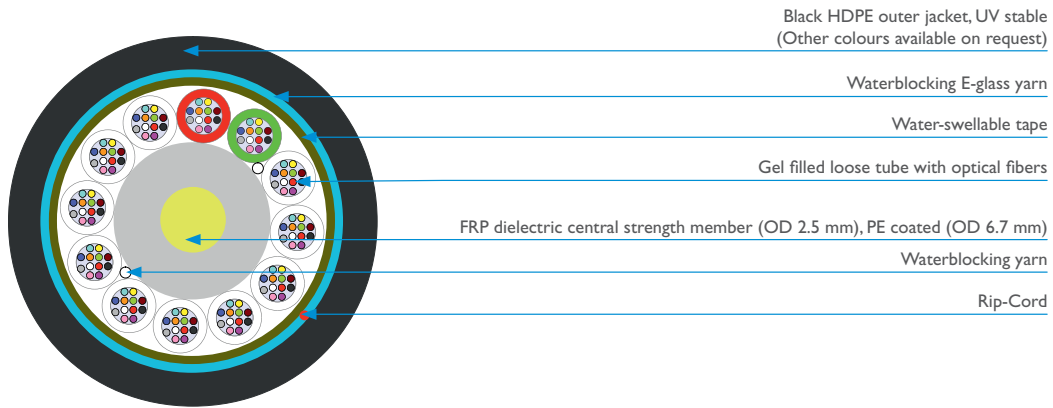
# MLT DUCT STANDARD

DIN CODE: A-DQ(BN)2Y 12x 2.3 max. 144F

ID: HE01

2

2.2



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		14.8 ± 0.4	mm	EN 60811-1-1	
Cable weight		171	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		5,500	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 2,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

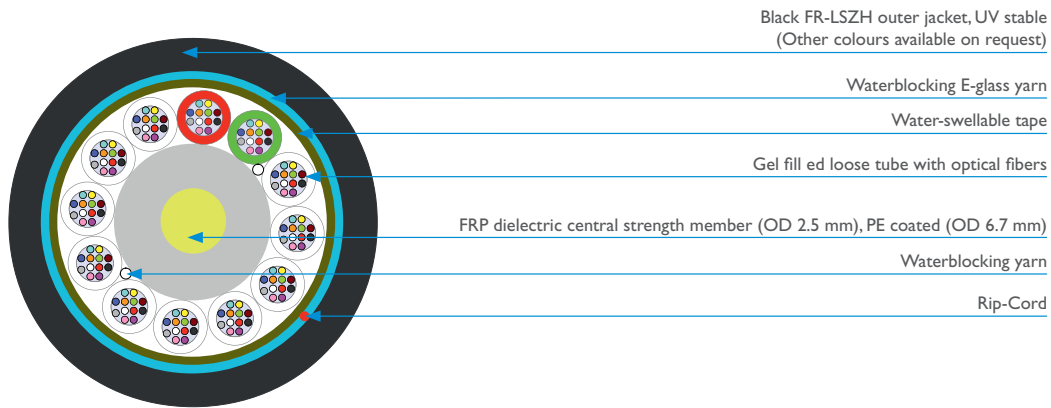
Cable life time – minimum 30 years. This cable is suitable for outdoor use.



# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 12× 2.3 max. 144F

ID: HE02



2

2.2

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		14.8 ± 0.4	mm	EN 60811-1-1	
Cable weight		207	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		5,500	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 2,500 N - no fiber strain for long term load - max attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

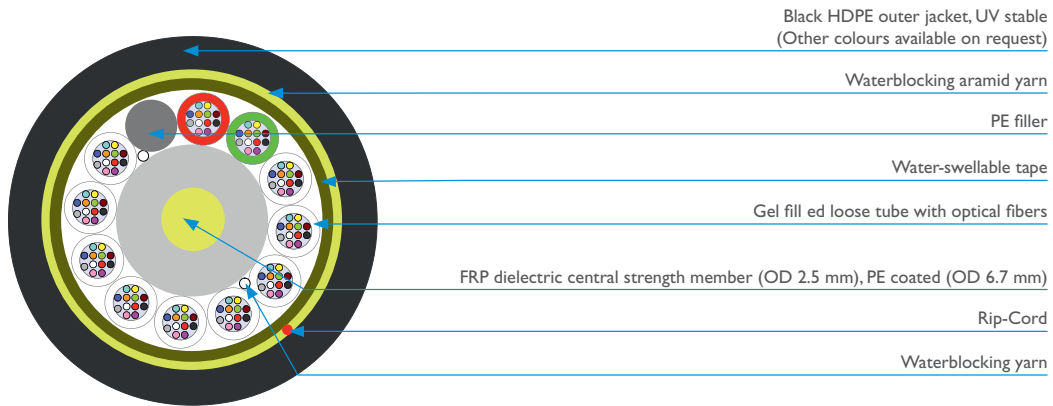
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(ZN)2Y 12× 2.3 max. 144F

ID: HA01

2  
2.2



## Mechanical and Environmental properties

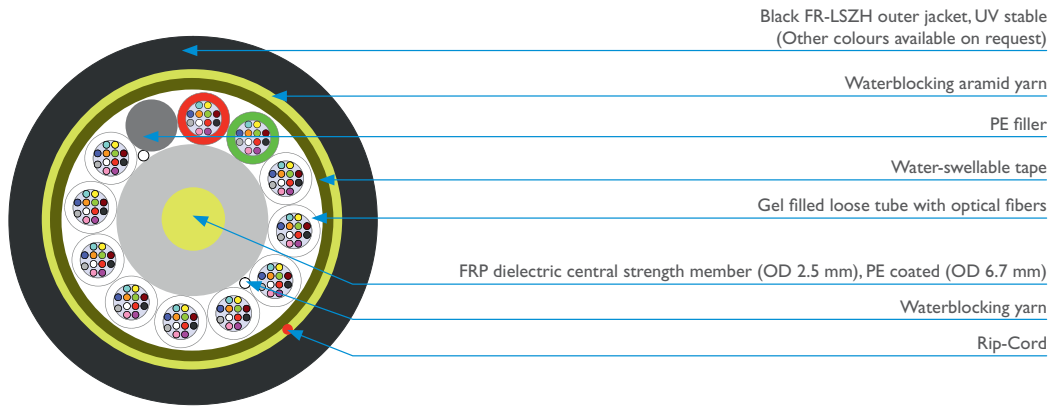
Test	Value	Unit	Method	Comment
Cable outer diameter	14.8 ± 0.4	mm	EN 60811-1-1	
Cable weight	169	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	5,900	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 4,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(ZN)H 12× 2.3 max. 144F

ID: HA02



2  
2.2

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	14.8 ± 0.4	mm	EN 60811-1-1	
Cable weight	205	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	5,900	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 4,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(BN)2Y 18× 1.7 max. 216 F

ID:VE01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

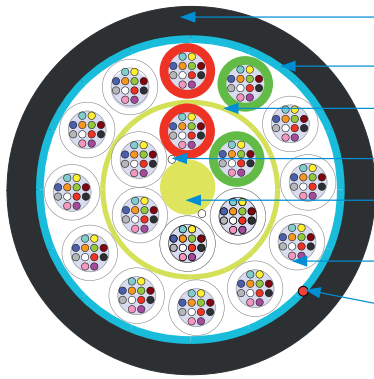
Waterblocking aramid yarn

Waterblocking yarn

FRP dielectric central strength member (OD 1.7 mm)

Gel filled loose tube with optical fibers

Rip-Cord



2

2.2

## Mechanical and Environmental properties

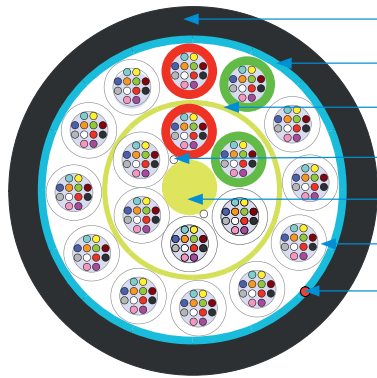
Test		Value	Unit	Method	Comment
Cable outer diameter		11.8 ± 0.4	mm	EN 60811-1-1	
Cable weight		117	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		1.7	mm		
Max. allowable tension		2,200	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - dwell time acc. to EN 60794-1-22-F1 - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 18× 1.7 max. 216 F

ID:VE02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

Waterblocking aramid yarn

Waterblocking yarn

FRP dielectric central strength member (OD 1.7 mm)

Gel filled loose tube with optical fibers

Rip-Cord

2  
2.2

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	11.8 ± 0.4	mm	EN 60811-1-1	
Cable weight	148	kg/km		- calculated
Outer jacket thickness	1.5 ± 0.2	mm		
Loose tube diameter	1.7	mm		
Max. allowable tension	2,200	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - dwell time acc. to EN 60794-1-22-F1 - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +80 °C -40 to +80 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(BN)2Y 18x 2.3 max. 216F

ID: IE01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

PE filler

Waterblocking aramid yarn

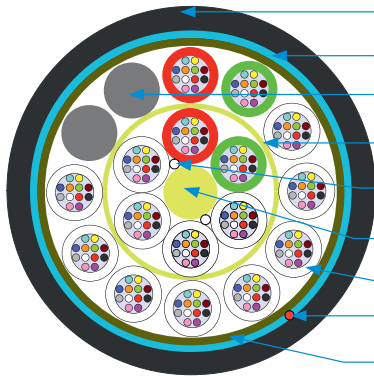
Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm)

Gel filled loose tube with optical fibers

Rip-Cord

Water-swellaable tape



The picture represents a cable with 192 optical fibers.

2

2.2

## Mechanical and Environmental properties

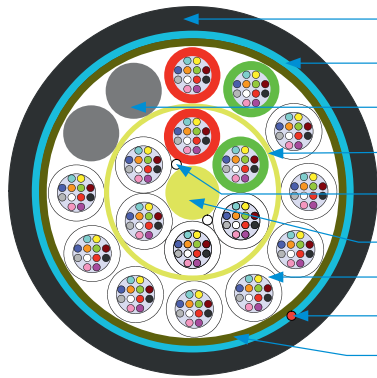
Test	Value	Unit	Method	Comment
Cable outer diameter	15.4 ± 0.4	mm	EN 60811-1-1	
Cable weight	187	kg/km		- calculated
Outer jacket thickness	1.5 ± 0.2	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	3,300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,300 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 18× 2.3 max. 216F

ID: IE02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

PE filler

Waterblocking aramid yarn

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm)

Gel filled loose tube with optical fibers

Rip-Cord

Water-swellable tape

2

2.2

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		15.4 ± 0.4	mm	EN 60811-1-1	
Cable weight		226	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		3,300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,300 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - dwell time acc. to EN 60794-1-22-F1 - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

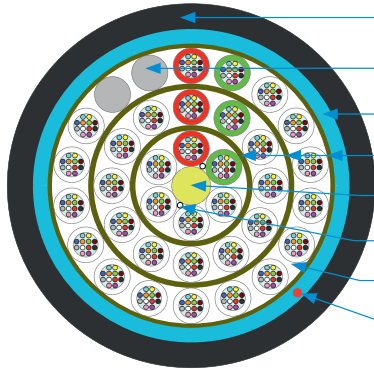
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE:A-DQ(BN)2Y 36× 2.5 max. 432F

ID: ME00

Black MDPE outer jacket, UV stable  
(Other colours available on request)



PE filler

Waterblocking E-glass

Water-swellable tape

FRP waterblocking central strength member (OD 2.7 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

The picture represents a cable with 408 fibers.

2

2.2

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	2,400 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)			370 kg/km
Standard put-up length			2,100 m
Packaging			Solid wooden drum
Loose tube diameter			2.5 mm
Outer jacket thickness			1.5 ± 0.2 mm
Cable outer diameter			22.6 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

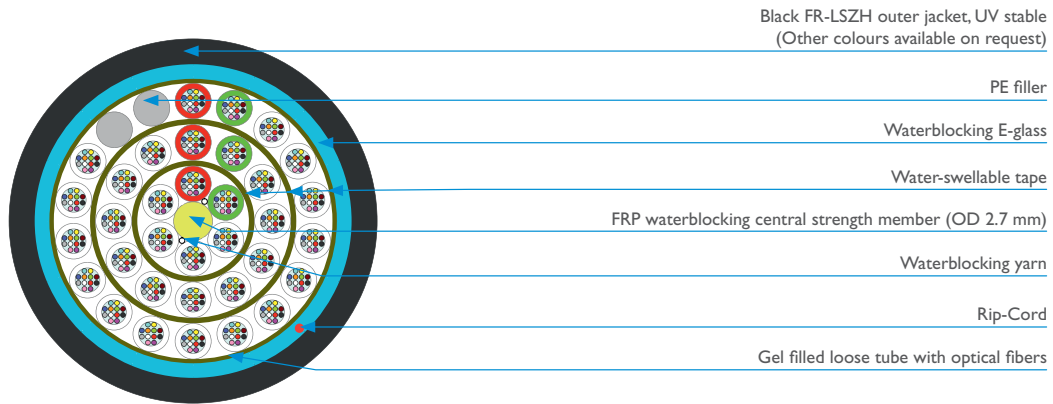
Cable life time – minimum 30 years. This cable is suitable for outdoor use.



# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 36× 2.5 max. 432F

ID: ME02



2  
2.2

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	2,400 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	-5 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		426 kg/km
Standard put-up length		2,100 m
Packaging		Solid wooden drum
Loose tube diameter		2.5 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		22.6 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT STANDARD

DIN CODE: A-DQ(BN)2Y 36× 3.0 max. 864F

ID: Z017

Black MDPE outer jacket, UV stable  
(Other colours available on request)

PE filler

Waterblocking E-glass

Waterblocking aramid yarn

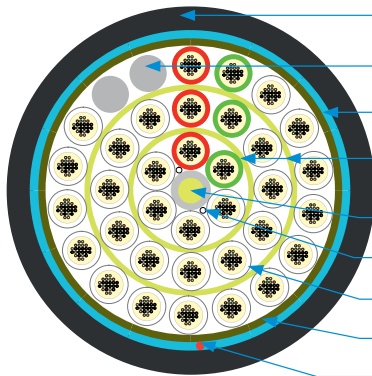
FRP dielectric central strength member (OD 1.8 mm), PE coated (OD 3.4 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Water-swellaable tape

Rip-Cord



The picture represents a cable with 816 optical fibers.

2

2.2

## Mechanical and Environmental properties

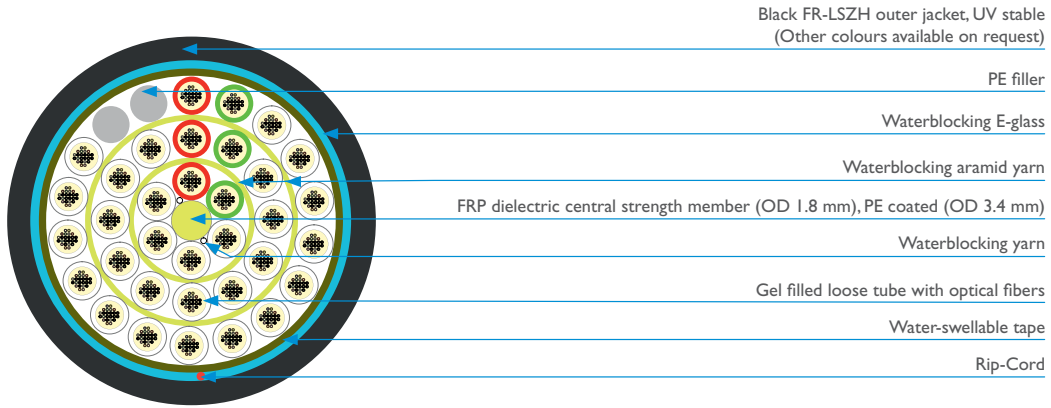
Test		Value	Unit	Method	Comment
Cable outer diameter		26.2 ± 0.4	mm	EN 60811-1-1	
Cable weight		495	kg/km		- calculated
Outer jacket thickness		1.8	mm		
Loose tube diameter		3	mm		
Coefficient of friction		0.17			
Max. tensile strength		4,700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,700 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT STANDARD

DIN CODE: J/A-DQ(BN)H 36× 3.0 max. 864F

ID: Z018



The picture represents a cable with 816 optical fibers.

2  
2.2

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		26.2 ± 0.4	mm	EN 60811-1-1	
Cable weight		583	kg/km		- calculated
Outer jacket thickness		1.8	mm		
Loose tube diameter		3	mm		
Max. tensile strength		4,700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,700 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

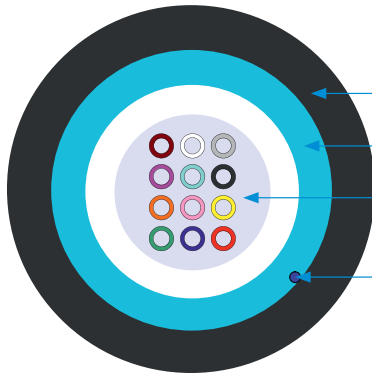
# CLT DUCT DURABLE

DIN CODE:A-DQ(BN)B2Y 1×2.5 max. 12F

ID:AR01

2

2.3



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

Gel filled PBT loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	2,000 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	15× cable diameter (no load)
		*E11B	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-5 °C to +50 °C
			-20 °C to +70 °C
			-20 °C to +70 °C
Cable informative nominal weight (calc.)			40 kg/km
Standard put-up length			2,100m, 4,100 m
Packaging			Plywood drum
Loose tube diameter			2.5 mm
Outer jacket thickness			1.2 ± 0.2 mm
Cable outer diameter			6.5 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

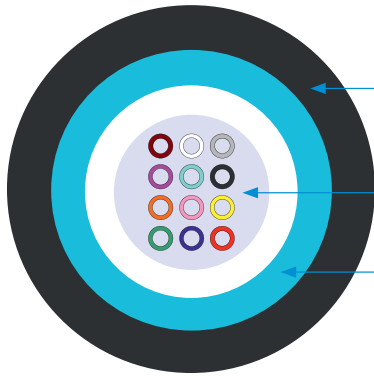
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor installation.

# CLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 1×2.5 max. 12F

ID: AR02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking E-glass yarn

2

2.3

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1A	2,000 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11A	15× cable diameter (no load)
	*E11B	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-20 °C to +70 °C
		-20 °C to +70 °C
Cable informative nominal weight (calc.)		52 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.5 mm
Outer jacket thickness		1.2 ± 0.2 mm
Cable outer diameter		6.5 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor installation.

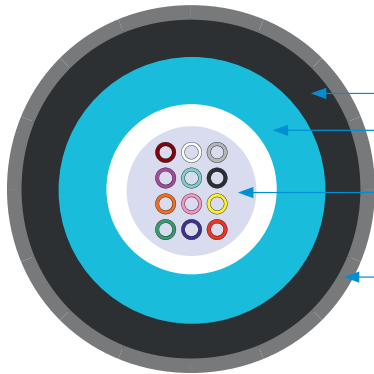
# CLT DUCT DURABLE

DIN CODE:A-DQ(BN)B2Y4Y I×2.5 max. 12F

ID:AR06

2

2.3



Black HDPE inner jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass yarn

Gel filled PBT loose tube with optical fibers

Black PA outer jacket, UV stable  
(Other jacket colours available on request)

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	2,000 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	10× cable diameter (no load)
		*E11B	15× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage		-15 °C to +50 °C
			-20 °C to +70 °C
			-20 °C to +70 °C
Cable informative nominal weight (calc.)			50 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			2.5 mm
Inner jacket thickness			1.2 ± 0.2 mm
Outer jacket thickness			0.5 ± 0.2 mm
Cable outer diameter			6.9 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

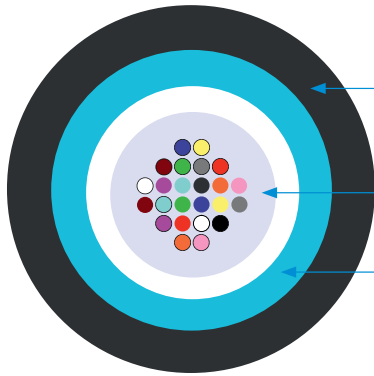
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable has good chemical and mechanical resistance, cable suitable for outdoor installation.

# CLT DUCT DURABLE

DIN CODE:A-DQ(BN)B2Y II 1×3.0 max. 24F

ID: BR01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking E-glass

2

2.3

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	2,500 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	15 × cable diameter (no load)
		*E11B	20 × cable diameter (load)
Moisture resistance		*F5	passed
Temperature range	Installation Operation Storage		-5 °C to +50 °C
			-20 °C to +70 °C
			-20 °C to +70 °C
Cable informative nominal weight (calc.)			51 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			3.0 mm
Outer jacket thickness			1.3 ± 0.2 mm
Cable outer diameter			7.7 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

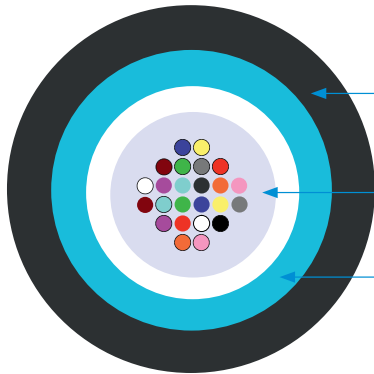
# CLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH II I×3.0 max. 24F

ID: BR02

2

2.3



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking E-glass

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	2,500 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	15× cable diameter (no load)
		*E11B	20× cable diameter (load)
Moisture resistance		*F5	passed
Temperature range	Installation	*F1	-15 °C to +50 °C
	Operation		-20 °C to +70 °C
	Storage		-20 °C to +70 °C
Cable informative nominal weight (calc.)			68 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			3.0 mm
Outer jacket thickness			1.3 ± 0.2 mm
Cable outer diameter			7.7 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

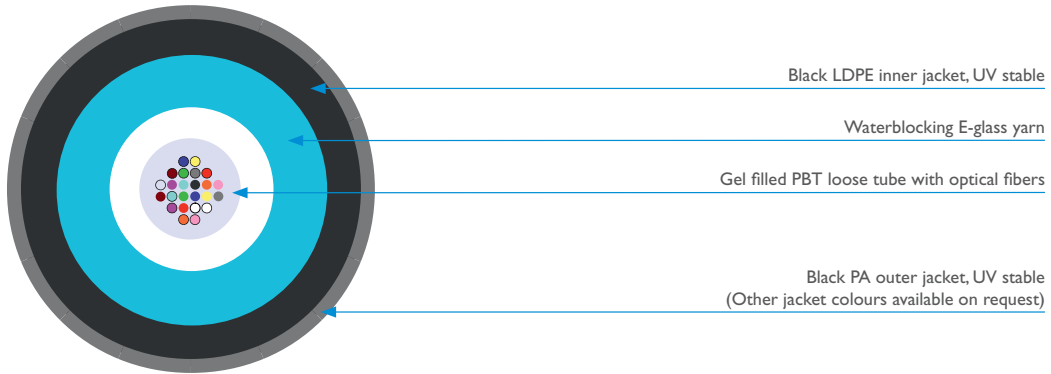
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.



# CLT DUCT DURABLE

DIN CODE:A-DQ(BN)B2Y4Y WBF I×3.0 max. 24F

ID: BR06



2  
2.3

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	2,500 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	10× cable diameter (no load)
		*E11B	15× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C
			-20 °C to +70 °C
Cable informative nominal weight (calc.)			66 kg/km
Packaging			Plywood drum
Loose tube diameter			3.0 mm
Inner jacket thickness			1.3 ± 0.2 mm
Outer jacket thickness			0.5 ± 0.2 mm
Cable outer diameter			8.7 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

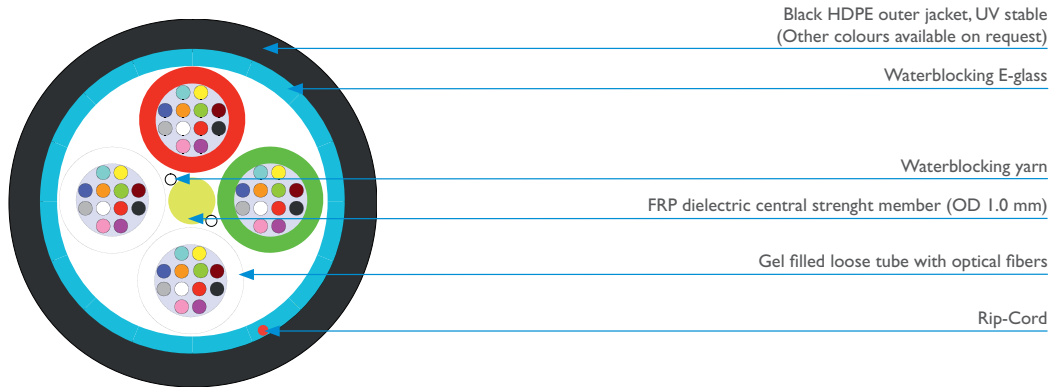
Cable life time – minimum 30 years. This cable has good chemical and mechanical resistance, cable suitable for outdoor installation.

# MLT DUCT DURABLE

DIN CODE: A-DQ(BN)B2Y 4×2.3 max. 48F

ID: LR01

2  
2.4



## Mechanical and Environmental properties

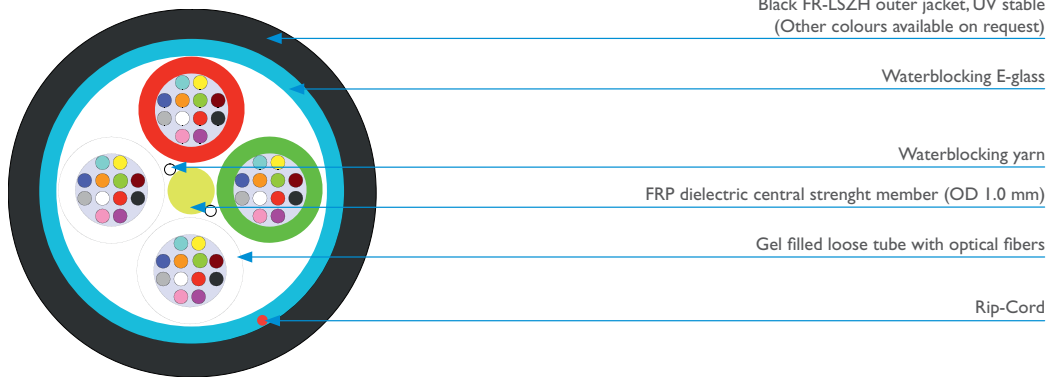
Test	Value	Unit	Method	Comment
Cable outer diameter	9.2 ± 0.4	mm	EN 60811-1-1	
Cable weight	74	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	2,600	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 220 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 4×2.3 max. 48F

ID: LR02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

Waterblocking yarn

FRP dielectric central strength member (OD 1.0 mm)

Gel filled loose tube with optical fibers

Rip-Cord

2

2.4

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	9.2 ± 0.4	mm	EN 60811-1-1	
Cable weight	95	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	2,600	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 220 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

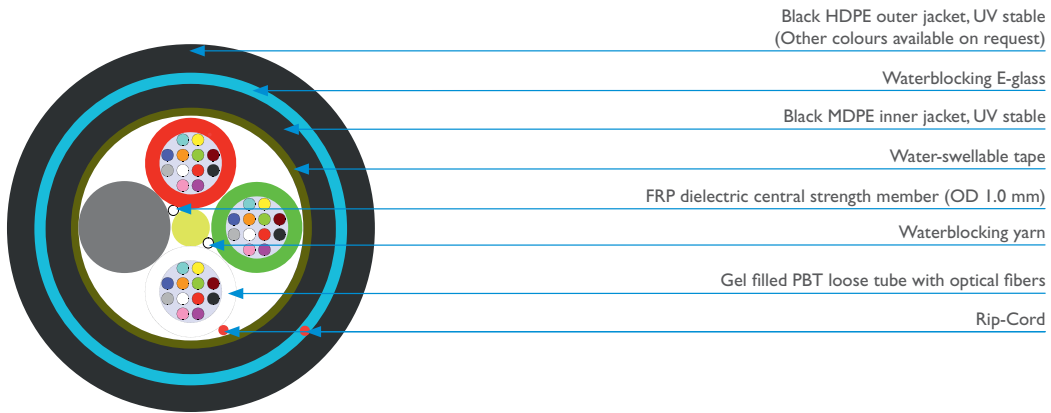
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT DURABLE

DIN CODE:A-DQ2Y(BN)B2Y 4×2.3 max. 48F

ID: LQPI

2  
2.4



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

Black MDPE inner jacket, UV stable

Water-swellable tape

FRP dielectric central strength member (OD 1.0 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord

The picture represents a cable with 36 fibers.

## Mechanical and Environmental properties

Test	Method	Value/Unit	
Tensile strength (long term)	*E1A	450 N	
Tensile strength (short term)		1,700 N	
Crush resistance	*E3	2,000 N/10 cm	
Impact resistance	*E4	3 impacts (w/10 Nm)	
Min. bend radius	*E11A	15× cable diameter (no load)	
	*E11B	20× cable diameter (load)	
Moisture resistance	*F5	passed	
Compound flow	*E14	30 cm/24 hrs/70 °C passed	
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C
			-40 °C to +70 °C
			-40 °C to +70 °C
Cable informative nominal weight (calc.)		109 kg/km	
Standard put-up length		2,100 m; 4,100 m	
Packaging		Plywood drum	
Loose tube nominal diameter		2.3 mm	
Inner jacket nominal thickness		1.0 ± 0.2 mm	
Outer jacket nominal thickness		1.5 ± 0.2 mm	
Cable nominal outer diameter (calc.)		11.8 ± 0.4 mm (measured acc. to EN 60811-1-1)	

\* IEC 60794-1-2

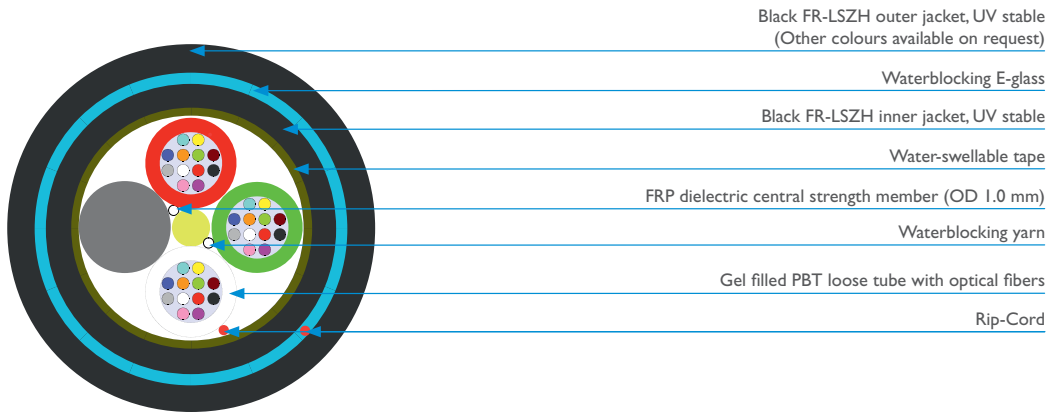
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. Cable is suitable for outdoor use.

# MLT DUCT DURABLE

DIN CODE: J/A-DQH(BN)BH 4×2.3 max. 48F

ID: LQF2



The picture represents a cable with 36 fibers.

2  
2.4

## Mechanical and Environmental properties

Test	Method	Value/Unit
Tensile strength (long term)	*E1A	450 N
Tensile strength (short term)		1,700 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/10 Nm)
Min. bend radius	*E11A	15× cable diameter (no load)
	*E11B	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1 -15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		152 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube nominal diameter		2.3 mm
Inner jacket nominal thickness		1.0 ± 0.2 mm
Outer jacket nominal thickness		1.5 ± 0.2 mm
Cable nominal outer diameter (calc.)		11.8 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. Cable is suitable for indoor or outdoor use.

# MLT DUCT DURABLE

DIN CODE: A-DQ(BN)B2Y 6×1.7 max. 72F

ID: CR01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

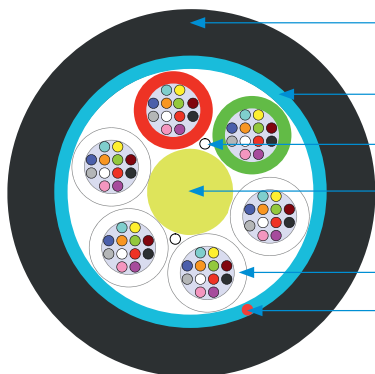
Waterblocking E-glass yarn

Waterblocking yarn

FRP dielectric central strength member (OD 1.7 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord



2

2.4

## Mechanical and Environmental properties

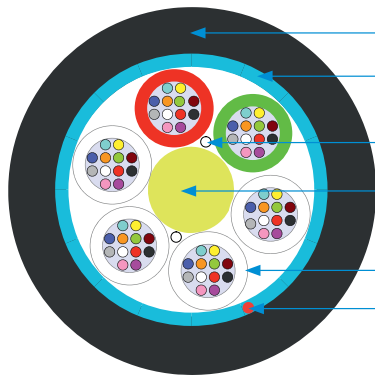
Test	Value	Unit	Method	Comment
Cable outer diameter	9.4 ± 0.4	mm	EN 60811-1-1	
Cable weight	81	kg/km		- calculated
Outer jacket thickness	1.5 ± 0.2	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	4,600	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 1,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	10	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	15	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm - dwell time acc. to EN 60794-2-22 F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 6×1.7 max. 72F

ID: CR02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass yarn

Waterblocking yarn

FRP dielectric central strength member (OD 1.7 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord

2

2.4

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		9.4 ± 0.4	mm	EN 60811-1-1	
Cable weight		102	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		4,600	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 1,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		3,000	N	EN 60794-1-2-E3	- plate dimensions 100×100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		15	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm - dwell time acc. to EN 60794-2-22 F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT DURABLE

DIN CODE: A-DQ(BN)B2Y 6×2.3 max. 72F

ID: FRO1

Black HDPE outer jacket, UV stable  
(Other colours available on request)

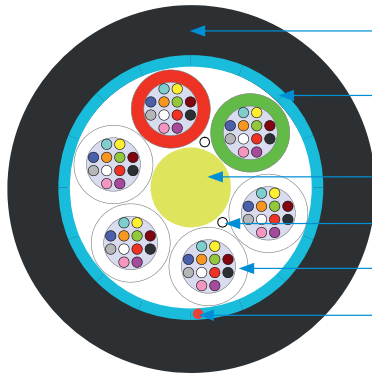
Waterblocking E-glass yarn

FRP dielectric central strength member (OD 2.5 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord



2

2.4

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		10.6 ± 0.4	mm	EN 60811-1-1	
Cable weight		99	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		4,500	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius		15	× OD	EN 60794-1-2-E1 I	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

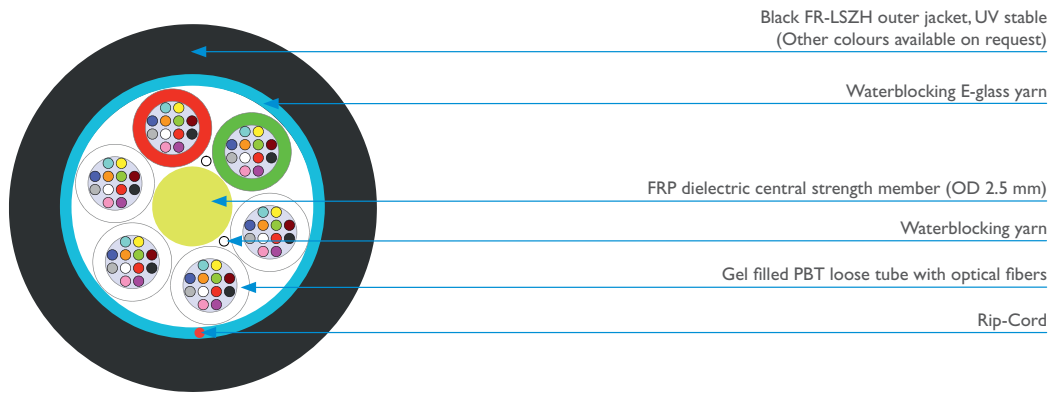
Cable life time – minimum 30 years. This cable is suitable for outdoor use.



# MLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 6×2.3 max. 72F

ID: FR02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass yarn

FRP dielectric central strength member (OD 2.5 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord

2

2.4

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	10.6 ± 0.4	mm	EN 60811-1-1	
Cable weight	125	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	4,500	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

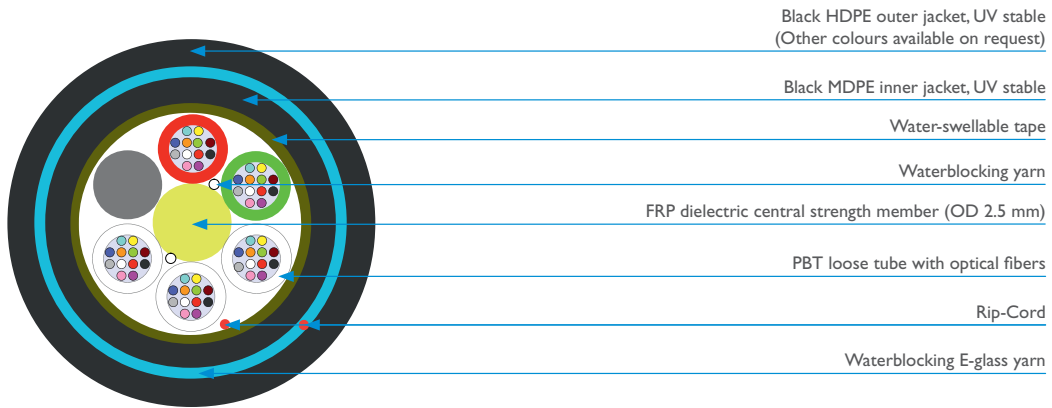
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT DURABLE

DIN CODE:A-DQ2Y(BN)B2Y 6×2.3 max. 72F

ID: FQPI

2  
2.4



The picture represents a cable with 60 fibers.

## Mechanical and Environmental properties

Test	Method	Value/Unit
Tensile strength (long term)	*E1A	1,200 N
Tensile strength (short term)		2,700 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/10 Nm)
Min. bend radius	*E11A	15× cable diameter (no load)
	*E11B	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		133 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.3 mm
Inner jacket thickness		1.0 ± 0.2mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		13.0 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

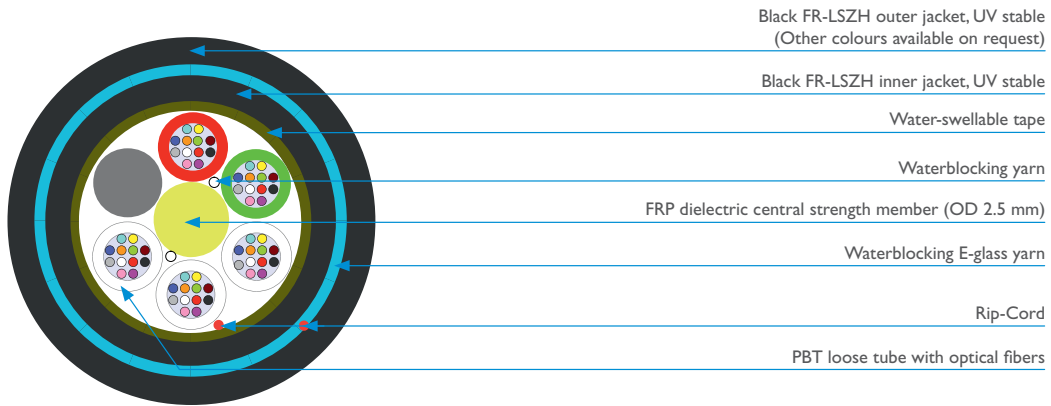
Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT DURABLE

DIN CODE: J/A-DQH(BN)BH 6× 2.3 max. 72F

ID: FQF2



The picture represents a cable with 60 fibers.

2  
2.4

## Mechanical and Environmental properties

Test	Method	Value/Unit
Tensile strength (long term)	*E1A	1,200 N
Tensile strength (short term)		2,700 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/10 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		182 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.3 mm
Inner jacket thickness		1.0 ± 0.2mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		13.0 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

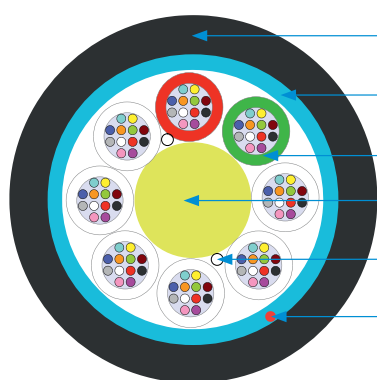
Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT DURABLE

DIN CODE: A-DQ(BN)B2Y 8× 1.7 max. 96F

ID: PR01

2  
2.4



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass yarn

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 2.8 mm)

Waterblocking E-glass yarn

Rip-Cord

## Mechanical and Environmental properties

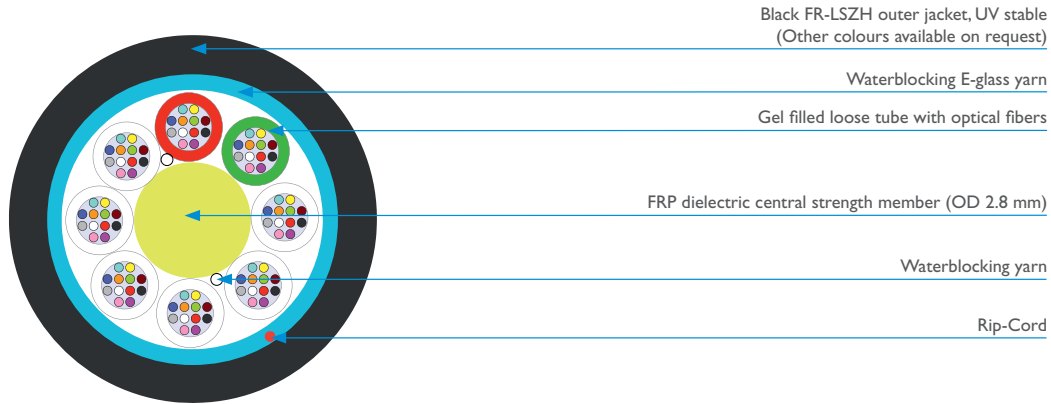
Test	Value	Unit	Method	Comment
Cable outer diameter	10.6 ± 0.4	mm	EN 60811-1-1	
Cable weight	107	kg/km		- calculated
Outer jacket thickness	1.5 ± 0.2	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	8,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 2,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	10	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)	15	× OD	EN 60794-1-2-E1 Ib	- no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm - dwell time acc. to EN 60794-2-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 8× 1.7 max. 96F

ID: PR02



2  
2.4

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	10.6 ± 0.4	mm	EN 60811-1-1	
Cable weight	130	kg/km		- calculated
Outer jacket thickness	1.5 ± 0.2	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	8,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 2,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	10	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)	15	× OD	EN 60794-1-2-E1 I b	- no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm - dwell time acc. to EN 60794-2-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT DURABLE

DIN CODE: A-DQ(BN)B2Y 8× 2.3 max. 96F

ID: GRO1

Black HDPE outer jacket, UV stable  
(Other colours available on request)

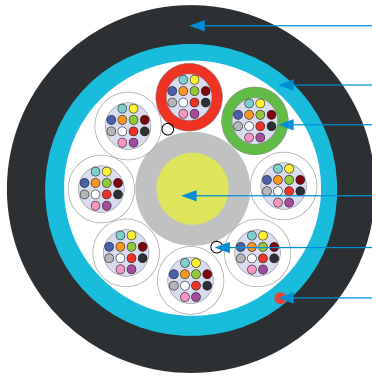
Waterblocking E-glass yarn

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 3.8 mm)

Waterblocking yarn

Rip-Cord



2

2.4

## Mechanical and Environmental properties

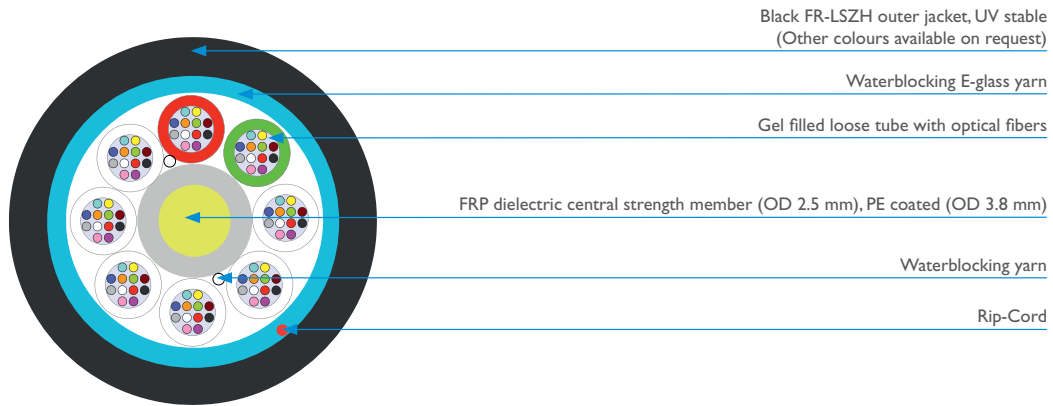
Test		Value	Unit	Method	Comment
Cable outer diameter		12.0 ± 0.4	mm	EN 60811-1-1	
Cable weight		131	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		7,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 2,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius		15	× OD	EN 60794-1-2-E1 I	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time acc. to EN 60794-2-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 8× 2.3 max. 96F

ID: GR02



2  
2.4

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	12.0 ± 0.4	mm	EN 60811-1-1	
Cable weight	161	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	7,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 2,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT DURABLE

DIN CODE: A-DQ(BN)B2Y 12× 1.7 max. 144F

ID: RR01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

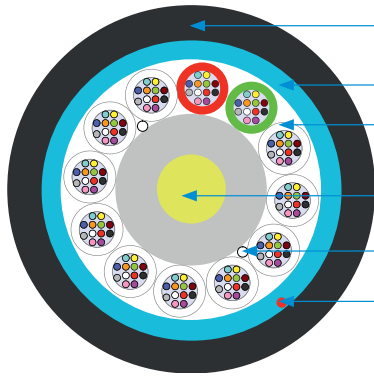
Waterblocking E-glass yarn

Gel filled loose tube with optical fibers

FRP Dielectric central strength member (OD 2.8 mm), PE coated (OD 5.0 mm)

Waterblocking yarn

Rip-Cord



2

2.4

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		12.8 ± 0.4	mm	EN 60811-1-1	
Cable weight		150	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		13,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 7,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)		15	× OD	EN 60794-1-2-E1 b	- no increase attenuation after the test
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm - dwell time acc. to EN 60794-2-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

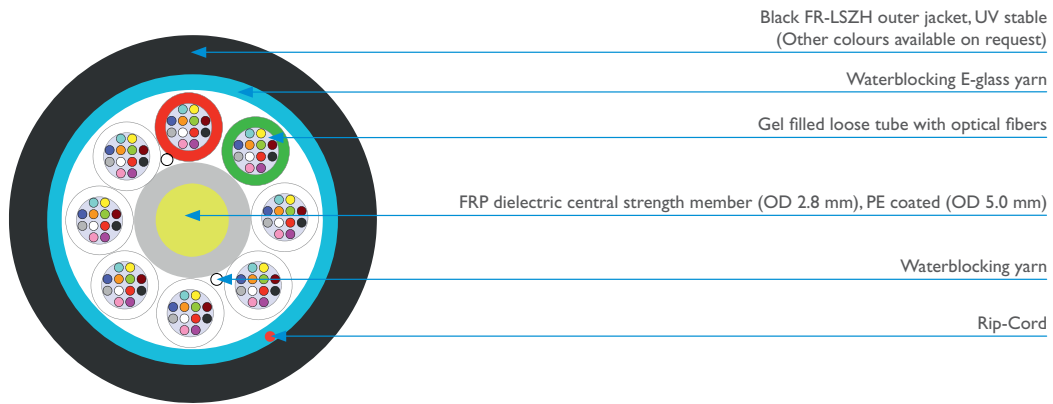
Cable life time – minimum 30 years. This cable is suitable for outdoor use.



# MLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 12× 1.7 max. 144F

ID: RR02



2  
2.4

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		12.8 ± 0.4	mm	EN 60811-1-1	
Cable weight		179	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		13,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 7,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)		15	× OD	EN 60794-1-2-E11b	- no increase attenuation after the test
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm - dwell time acc. to EN 60794-2-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT DURABLE

DIN CODE:A-DQ(BN)B2Y 12× 2.3 max. 144F

ID: HR01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

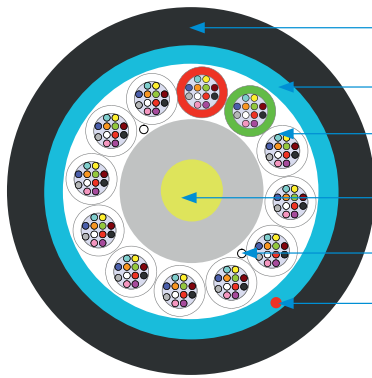
Waterblocking E-glass yarn

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 6.7 mm)

Waterblocking yarn

Rip-Cord



2

2.4

## Mechanical and Environmental properties

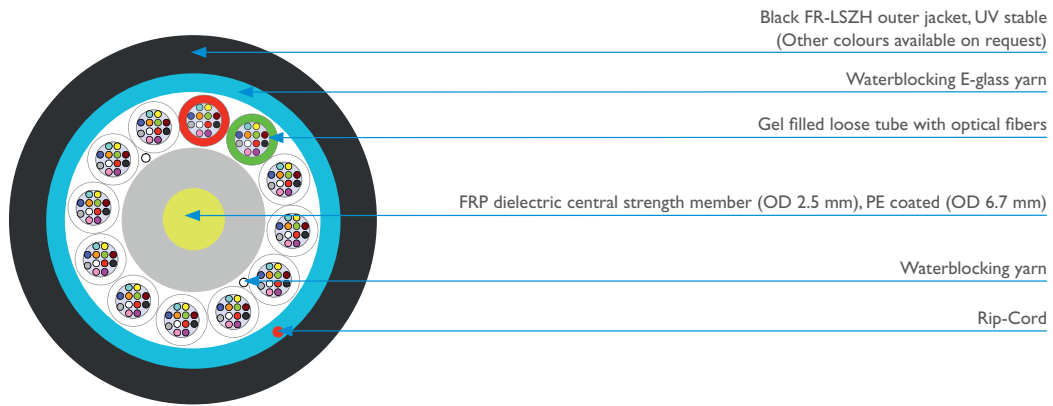
Test	Value	Unit	Method	Comment
Cable outer diameter	14.9 ± 0.4	mm	EN 60811-1-1	
Cable weight	197	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	10	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 5,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius	15	× OD	EN 60794-1-2-E1 I	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 12× 2.3 max. 144F

ID: HR02



2  
2.4

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	14.9 ± 0.4	mm	EN 60811-1-1	
Cable weight	235	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	10	kN	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 5,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

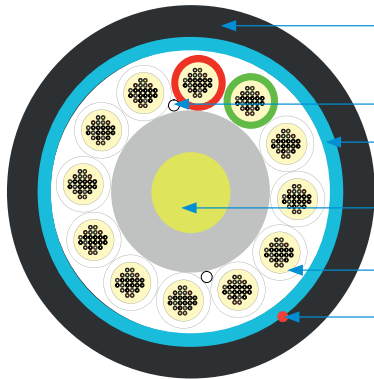
Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT DURABLE

DIN CODE:A-DQ(BN)B2Y 12× 2.8 max. 288F

ID:YR01

Black HDPE outer jacket, UV stable  
(Other colours available on request)



Waterblocking yarn

Waterblocking E-glass

FRP dielectric central strength member (OD 3.0 mm), PE coated (OD 8.2 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord

2

2.4

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	10,000 N
Crush resistance		*E3	3,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage		-15 °C to +50 °C
			-30 °C to +70 °C
			-30 °C to +70 °C
Cable informative nominal weight (calc.)			258 kg/km
Standard put-up length			2,100 m
Packaging			Plywood drum
Loose tube diameter			2.3 mm
Outer jacket thickness			1.5 ± 0.2 mm
Cable outer diameter			13.0 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

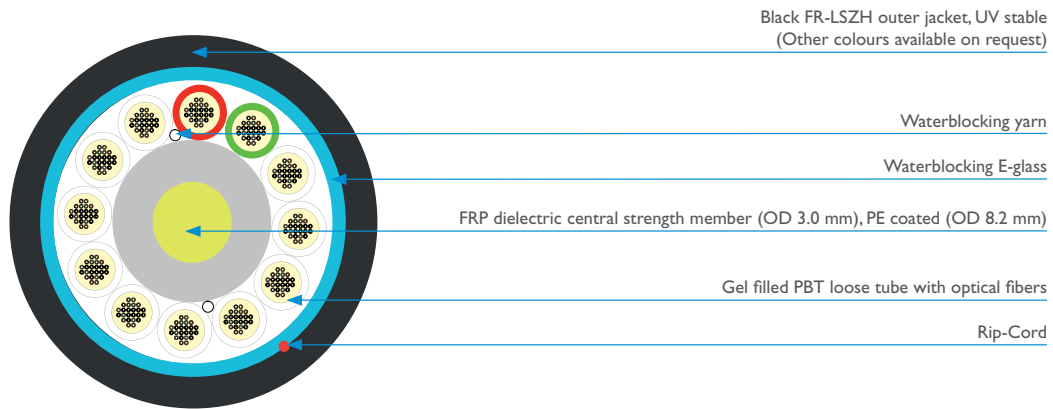
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 12× 2.8 max. 288F

ID:YR02



2  
2.4

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	10,000 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-30 °C to +70 °C
		-30 °C to +70 °C
Cable informative nominal weight (calc.)		299 kg/km
Standard put-up length		2,100 m
Packaging		Plywood drum
Loose tube diameter		2.8 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		17.2 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT DURABLE

DIN CODE:A-DQ(BN)B2Y 18× 1.7 max. 216F

ID:VR01

Black HDPE outer jacket, UV stable  
(Other colours available on request)

PE filler

Waterblocking aramid yarn

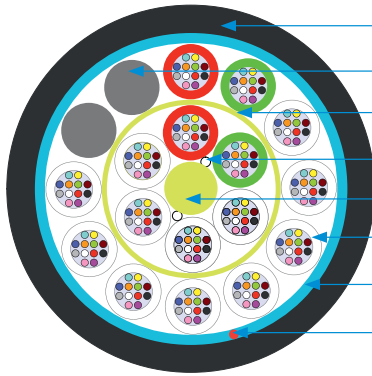
Waterblocking yarn

FRP dielectric central strength member (OD 1.7 mm)

Gel filled loose tube with optical fibers

Waterblocking E-glass

Rip-Cord



The picture represents a cable with 192 fibers.

2

2.4

## Mechanical and Environmental properties

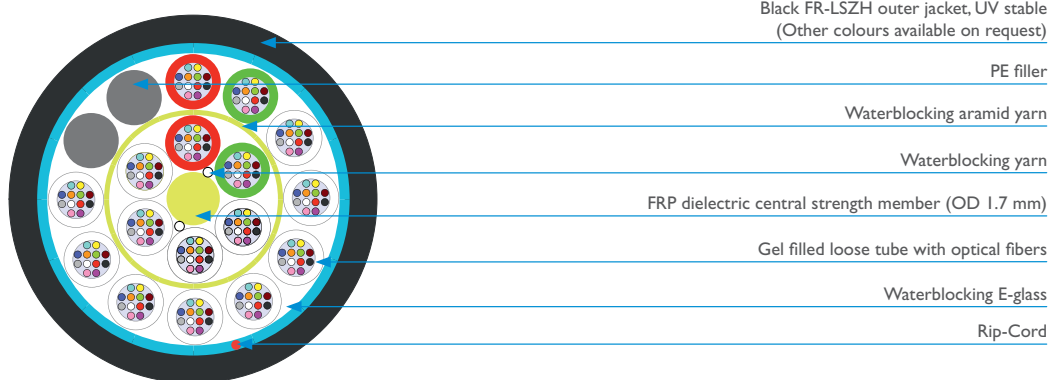
Test	Value	Unit	Method	Comment
Cable outer diameter	12.1 ± 0.4	mm	EN 60811-1-1	
Cable weight	134	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	1.7	mm		
Max. allowable tension	5,100	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 b	- no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 18× 1.7 max. 216F

ID:VR02



2  
2.4

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		12.1 ± 0.4	mm	EN 60811-1-1	
Cable weight		164	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		1.7	mm		
Max. allowable tension		5,100	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT DURABLE

DIN CODE: A-DQ(BN)B2Y 18× 2.3 max. 216F

ID: IRO1

Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

PE filler

Waterblocking aramid yarn

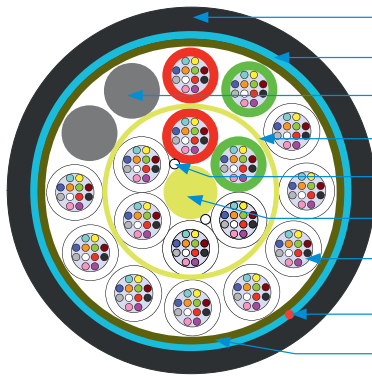
Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm)

Gel filled loose tube with optical fibers

Rip-Cord

Water-swellaable tape



The picture represents a cable with 192 optical fibers.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		15.8 ± 0.4	mm	EN 60811-1-1	
Cable weight		223	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		6,700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

2

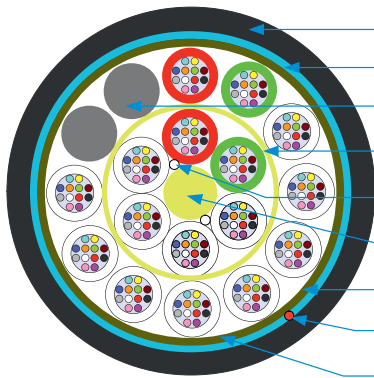
2.4



# MLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 18× 2.3 max. 216F

ID: IR02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

PE filler

Waterblocking aramid yarn

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm)

Gel filled loose tube with optical fibers

Rip-Cord

Water-swellaable tape

The picture represents a cable with 192 optical fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	15.4 ± 0.4	mm	EN 60811-1-1	
Cable weight	263	kg/km		- calculated
Outer jacket thickness	1.5 ± 0.2	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	6,700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - dwell time acc. to EN 60794-1-22-F1 - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# MLT DUCT DURABLE

DIN CODE: A-DQ(BN)B2Y 36× 2.3 max. 432F

ID: MR00

Black MDPE outer jacket, UV stable  
(Other colours available on request)

PE filler

Waterblocking E-glass

Waterblocking aramid yarn

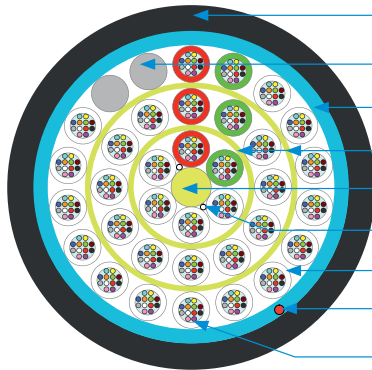
FRP waterblocking central strength member (OD 2.5 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

Gel filled loose tube with optical fibers



The picture represents a cable with 408 fibers.

2

2.4

## Mechanical and Environmental properties

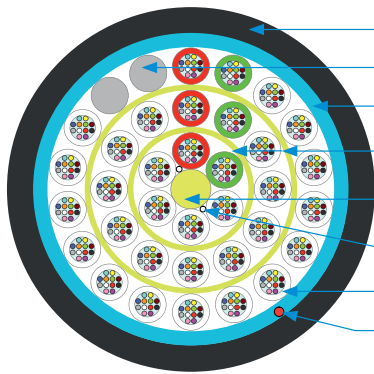
Test		Value	Unit	Method	Comment
Cable outer diameter		20.3 ± 0.4	mm	EN 60811-1-1	
Cable weight		325	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		7,700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 3,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT DUCT DURABLE

DIN CODE: J/A-DQ(BN)BH 36× 2.3 max. 432F

ID: MR02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

PE filler

Waterblocking E-glass

Waterblocking aramid yarn

FRP waterblocking central strength member (OD 2.5 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

The picture represents a cable with 408 fibers.

2

2.4

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		20.3 ± 0.4	mm	EN 60811-1-1	
Cable weight		283	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		7,700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 3,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 I b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.





### **3. MICRO DUCT CABLES**

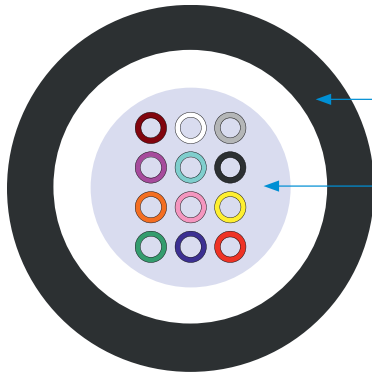
3.1 CLT

3.2 MLT

# CLT MICRO DUCT

DIN CODE:A-D2Y

ID:AM01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

3

3.1

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	50 N
Crush resistance		*E3	1,000 N/10 cm
Impact resistance		*E4	3 impacts (w/7 Nm)
Torsion		*E7	500 mm/10 N/360°/10 cycles
Kink		*E10	40 mm
Min. bend radius		*E11A	40 mm
		*E11B	60 mm/100 cycles
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-5 °C to +50 °C
			-20 °C to +70 °C
			-20 °C to +70 °C
Cable informative nominal weight (calc.)			8.5 kg/km
Standard put-up length			2,100 m ± 5 %
Packaging			Plywood drum
Loose tube diameter			2.1 mm
Outer jacket thickness			0.5 ± 0.1 mm
Cable outer diameter			3.1 ± 0.1 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

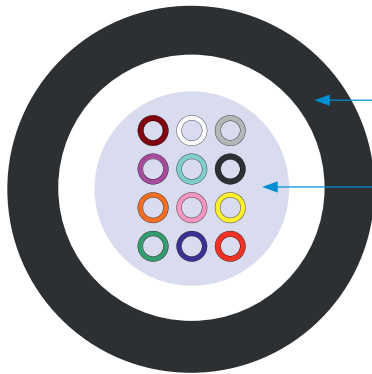
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

# CLT MICRO DUCT

DIN CODE: J/A-DH

ID: AM02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

3

3.1

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1A	50 N
Crush resistance	*E3	1,000 N/10 cm
Impact resistance	*E4	3 impacts (w/7 Nm)
Torsion	*E7	500 mm/10 N/360°/10 cycles
Kink	*E10	40 mm
Min. bend radius	*E11A	40 mm
	*E11B	60 mm/100 cycles
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	Installation
		Operation
		Storage
Cable informative nominal weight (calc.)		11 kg/km
Standard put-up length		2,100 m
Packaging		Plywood drum
Loose tube diameter		2.1 mm
Outer jacket thickness		0.5 ± 0.1 mm
Cable outer diameter		3.1 ± 0.1 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

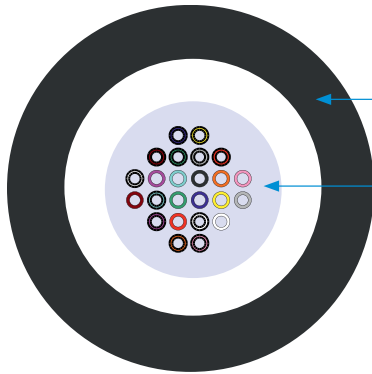
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

# CLT MICRO DUCT

DIN CODE:A-D2Y max. 24F

ID: BM00



Black LDPE outer jacket, UV stable  
(Other jacket colours available on request)

Gel filled loose tube with optical fibers

3

3.1

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	50 N
Crush resistance		*E3	1,000 N/10 cm
Impact resistance		*E4	3 impacts (w/7 Nm)
Torsion		*E7	500 mm/10 N/360°/10 cycles
Kink		*E10	40 mm
Min. bend radius		*E11A	40 mm
		*E11B	60 mm/100 cycles
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-5 °C to +50 °C
			-20 °C to +70 °C
			-20 °C to +70 °C
Cable informative nominal weight (calc.)			13 kg/km
Standard put-up length			2,100 m
Packaging			Plywood drum
Loose tube diameter			3.0 mm
Outer jacket thickness			0.4 ± 0.15 mm
Cable outer diameter			3.8 ± 0.2 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

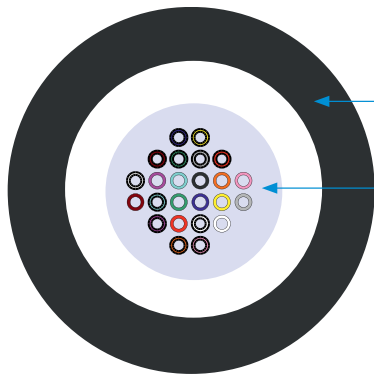
Cable life time – minimum 30 years. This cable is suitable for Air-blowing.



# CLT MICRO DUCT

DIN CODE: J/A-DH max. 24F

ID: BM02



Black FR-LSZH outer jacket, UV stable  
(Other jacket colours available on request)

Gel filled loose tube with optical fibers

3

3.1

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1A	50 N
Crush resistance	*E3	1,000 N/10 cm
Impact resistance	*E4	3 impacts (w/7 Nm)
Torsion	*E7	500 mm/10 N/360 °C/10 cycles
Kink	*E10	40 mm
Min. bend radius	*E11A	40 mm
	*E11B	60 mm/100 cycles
Moisture resistance	*F5	passed
Temperature range	*F1	-15 °C to +50 °C
		-20 °C to +70 °C
		-20 °C to +70 °C
Cable informative nominal weight (calc.)		17.5 kg/km
Standard put-up length		2,100 m
Packaging		Plywood drum
Loose tube diameter		3.0 mm
Outer jacket thickness		0.5 ± 0.15 mm
Cable outer diameter		4.0 ± 0.2 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

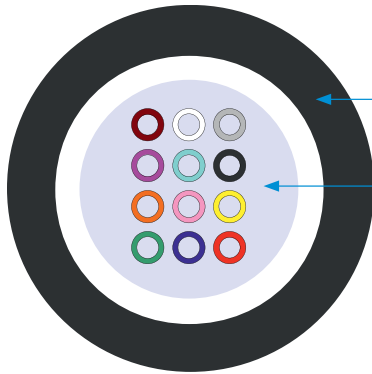
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

# CLT MICRO DUCT

DIN CODE:A-D2Y Blown Cable 2.5 mm max. 12F

ID: Z167



Black HDPE outer jacket, UV stable  
(Other jacket colours available on request)

Gel filled PBT loose tube with optical fibers

3

3.1

## Mechanical and Environmental properties

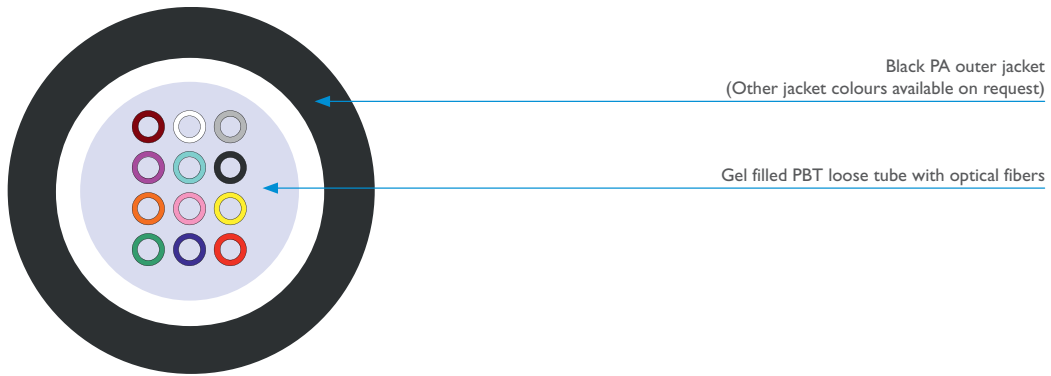
Test		Value	Unit	Method	Comment
Cable outer diameter		2.5 ± 0.1	mm	EN 60811-1-1	
Cable weight		5.6	kg/km		- calculated
Outer jacket thickness		0.4	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		40	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		15	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

# CLT MICRO DUCT

DIN CODE:A-D4Y Blown Cable 2.5 mm max. 12F

ID: Z008



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		2.5 ± 0.1	mm	EN 60811-1-1	
Cable weight		6.1	kg/km		- calculated
Outer jacket thickness		0.4	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		40	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		15	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

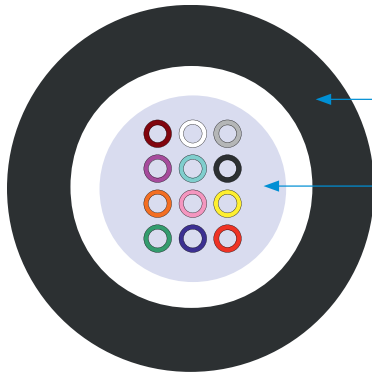
3

3.1

# CLT MICRO DUCT

DIN CODE: A-D4Y Blown Cable 2.8 mm max. 12F

ID: Z006



Black PA outer jacket  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

3

3.1

## Mechanical and Environmental properties

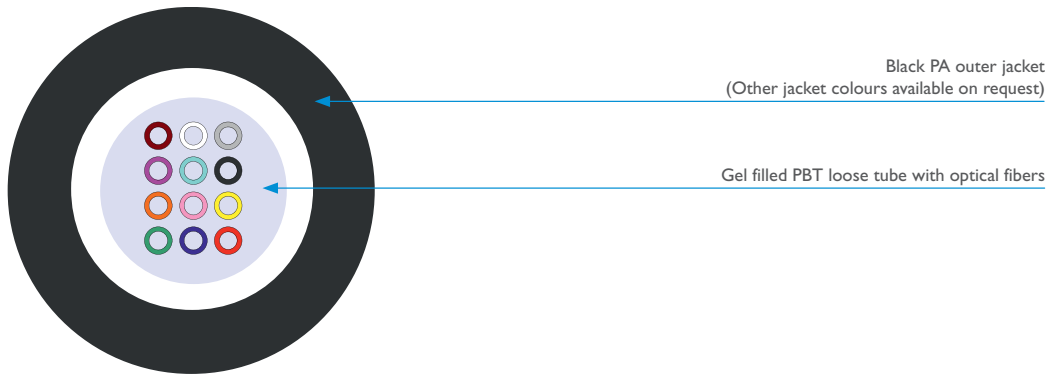
Test		Value	Unit	Method	Comment
Cable outer diameter		2.8 ± 0.1	mm	EN 60811-1-1	
Cable weight		7.5	kg/km		- calculated
Outer jacket thickness		0.55 ± 0.15	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		40	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 8 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		15	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

# CLT MICRO DUCT

DIN CODE: A-D4Y Blown Cable 3.5 mm max. 12F

ID: Z007



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		3.5 ± 0.1	mm	EN 60811-1-1	
Cable weight		11.5	kg/km		- calculated
Outer jacket thickness		0.5 ± 0.1	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		40	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 8 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		15	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

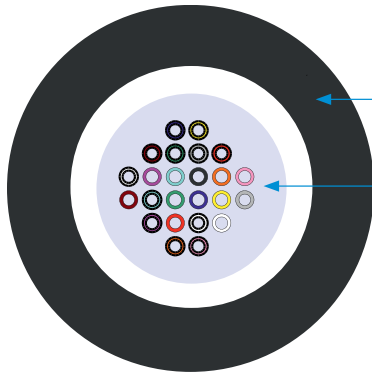
3

3.1

# CLT MICRO DUCT

DIN CODE: A-D4Y 1×2.3 max. 24F

ID: Z238



Black PA outer jacket  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

3

3.1

## Mechanical and Environmental properties

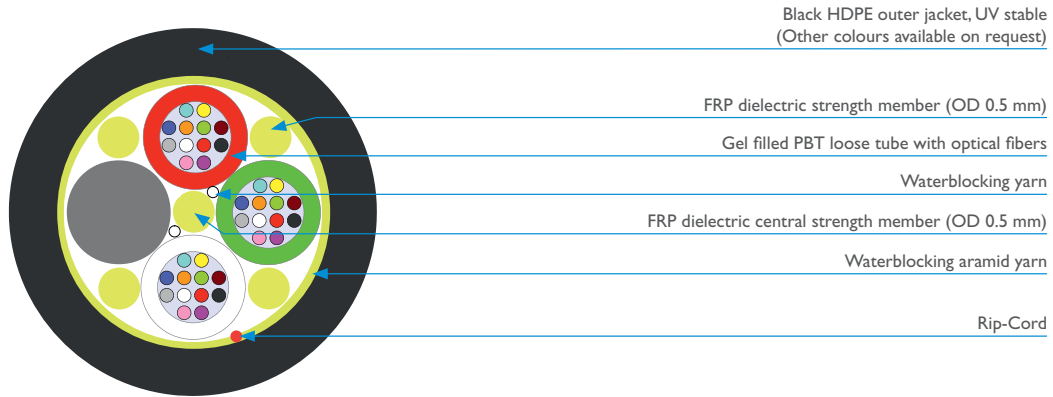
Test		Value	Unit	Method	Comment
Cable outer diameter		2.8 ± 0.1	mm	EN 60811-1-1	
Cable weight		8	kg/km		- calculated
Outer jacket thickness		0.25	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		40	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Crush resistance test		200	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.15 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation ≤ 0.15 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		15	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation Operation Storage	-5 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

# MLT MICRO DUCT

DIN CODE: A-DQ(ZN)2Y 4×1.4 max. 48F (200 μm)

ID: Z021



The picture represents a cable with 36 optical fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	4.5 ± 0.2	mm	EN 60811-1-1	
Cable weight	17.5	kg/km		- calculated
Outer jacket thickness	0.5	mm		
Loose tube diameter	1.4	mm		
Max. tensile strength	1,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 100 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation Operation Storage	5 to +50 °C -20 to +60 °C -20 to +60 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20°C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

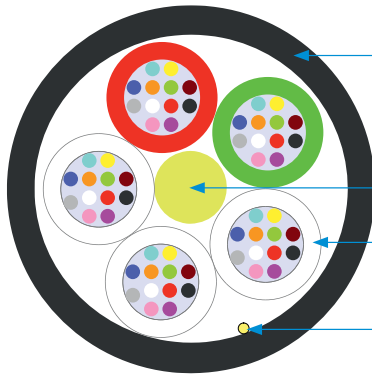
3

3.2

# MLT MICRO DUCT

DIN CODE:A-DQ(ZN)2Y 5×1.7 max. 60F

ID: UM01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

FRP dielectric central strength member (OD 1.3 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord

3

3.2

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	450 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	15× cable diameter (no load)
		*E11B	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation	*F1	-15 °C to +50 °C
	Operation		-40 °C to +70 °C
	Storage		-40 °C to +70 °C
Cable informative nominal weight (calc.)			28 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			1.7 mm
Outer jacket thickness			0.5 ± 0.2 mm
Cable outer diameter			5.7 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

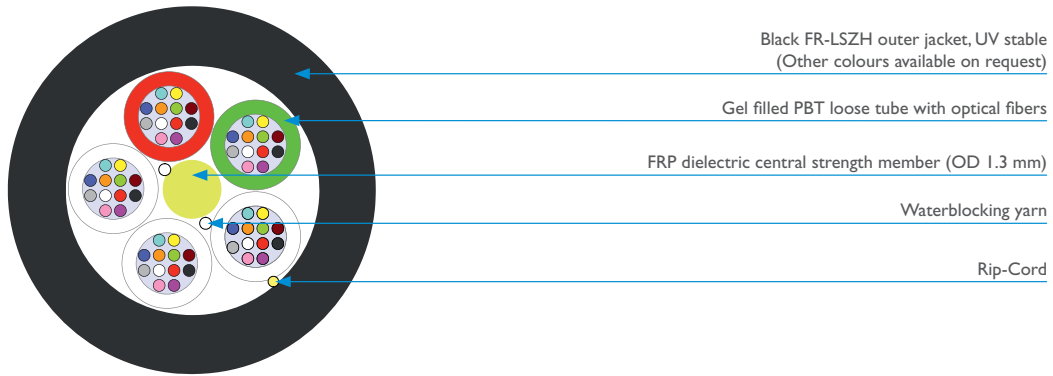
Cable life time – minimum 30 years. This cable is suitable for blowing into tube.



# MLT MICRO DUCT

DIN CODE: J/A-DQ(ZN)H 5×1.7 max. 60F

ID: UM02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

FRP dielectric central strength member (OD 1.3 mm)

Waterblocking yarn

Rip-Cord

3

3.2

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1 A	450 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11 A	15× cable diameter (no load)
		*E11 B	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)			55 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			1.7 mm
Outer jacket thickness			1.2 ± 0.2 mm
Cable outer diameter			7.1 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

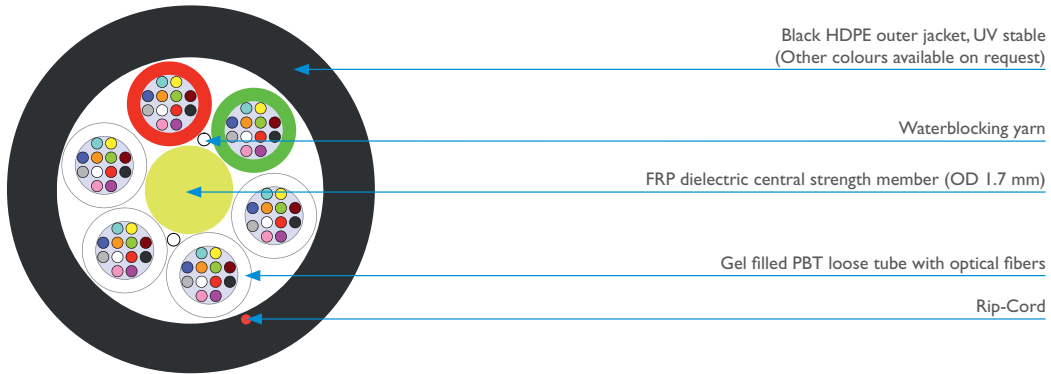
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE:A-DQ(ZN)2Y 6×1.5 max. 72F

ID:TM01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking yarn

FRP dielectric central strength member (OD 1.7 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord

3

3.2

## Mechanical and Environmental properties

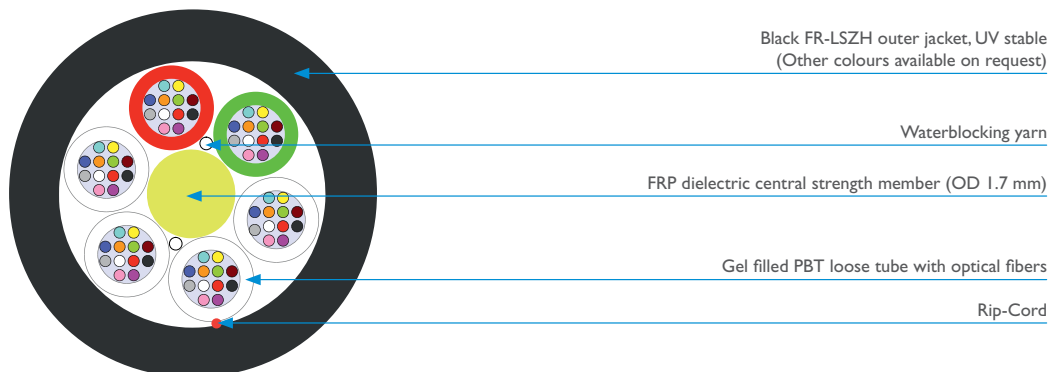
Test		Value	Unit	Method	Comment
Cable outer diameter		5.6 ± 0.3	mm	EN 60811-1-1	
Cable weight		28	kg/km		- calculated
Outer jacket thickness		0.45	mm		
Loose tube diameter		1.5	mm		
Max. tensile strength		1,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 300 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test		1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 I b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE: J/A-DQ(ZN)H 6×1.5 max. 72F

ID:TM02



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	6.7 ± 0.3	mm	EN 60811-1-1	
Cable weight	48	kg/km		- calculated
Outer jacket thickness	1.0	mm		
Loose tube diameter	1.5	mm		
Max. tensile strength	1,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 300 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test	1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

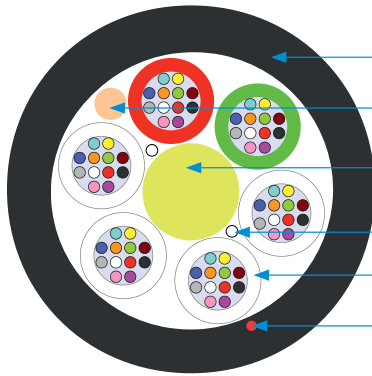
3

3.2

# MLT MICRO DUCT

DIN CODE:A-DSQ(ZN)2Y 6×1.5 max. 72F

ID:TM51



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Cu wire (AWG 24)

FRP central strength member (OD 1.7 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord

3

3.2

## Mechanical and Environmental properties

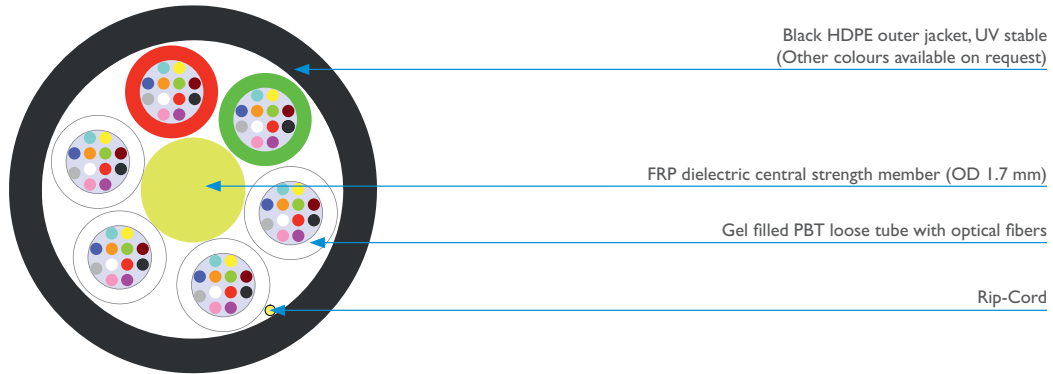
Test	Value	Unit	Method	Comment
Cable outer diameter	5.8 ± 0.4	mm	EN 60811-1-1	
Cable weight	31	kg/km		- calculated
Outer jacket thickness	0.5 ± 10 %	mm		
Loose tube diameter	1.5	mm		
Max. tensile strength	1,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 300 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test	1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is certified for blowing into tube 10/8.

# MLT MICRO DUCT

DIN CODE:A-DQ(ZN)2Y 6×1.7 max. 72F

ID: CM01



3

3.2

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1A	750 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11A	15× cable diameter (no load)
	*E11B	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		33 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		1.7 mm
Outer jacket thickness		0.5 ± 0.2 mm
Cable outer diameter		6.1 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

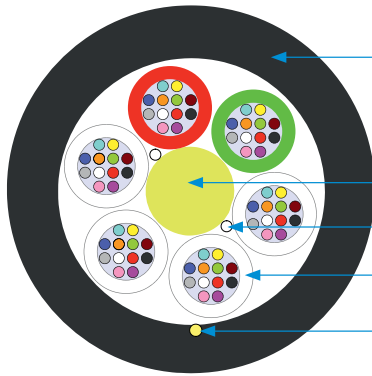
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE: J/A-DQ(ZN)H 6×1.7 max. 72F

ID: CM02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

FRP dielectric central strength member (OD 1.7 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord

3

3.2

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	750 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	15× cable diameter (no load)
		*E11B	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage		-15 °C to +50 °C
			-40 °C to +70 °C
			-40 °C to +70 °C
Cable informative nominal weight (calc.)			62 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			1.7 mm
Outer jacket thickness			1.2 ± 0.2 mm
Cable outer diameter			7.5 ± 0.4 mm
			(measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

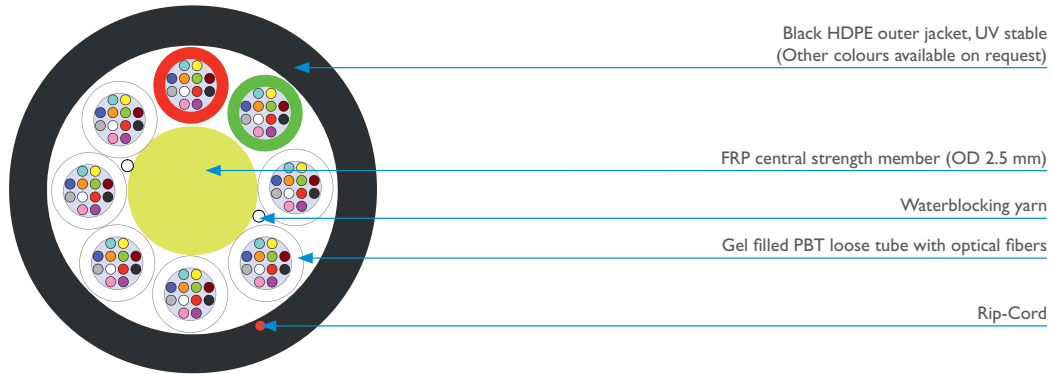
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE: A-DQ(ZN)2Y 8×1.5 max. 96F

ID: QM01



3

3.2

## Mechanical and Environmental properties

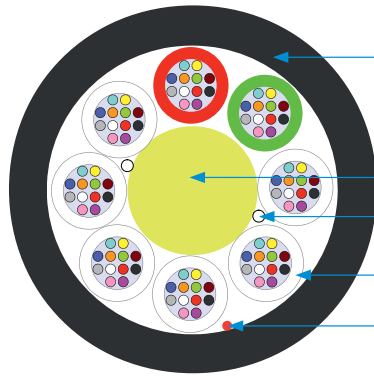
Test	Value	Unit	Method	Comment
Cable outer diameter	6.5 ± 0.4	mm	EN 60811-1-1	
Cable weight	40	kg/km		- calculated
Outer jacket thickness	min. 0.45	mm		
Loose tube diameter	1.5	mm		
Coefficient of friction	0.12			
Max. tensile strength	2,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is certified for blowing into tube 14/10.

# MLT MICRO DUCT

DIN CODE: J/A-DQ(ZN)H 8×1.5 max. 96F

ID: QM02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

FRP central strength member (OD 2.5 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord

3

3.2

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		7.5 ± 0.4	mm	EN 60811-1-1	
Cable weight		62	kg/km		- calculated
Outer jacket thickness		1.0	mm		
Loose tube diameter		1.5	mm		
Max. tensile strength		2,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test		1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22 F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

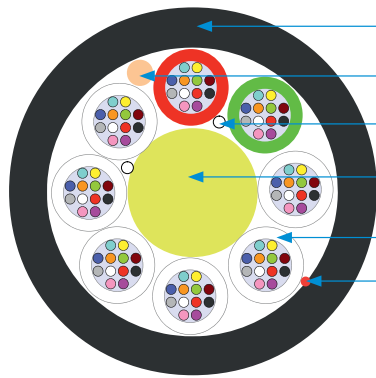
Cable life time – minimum 30 years. This cable is suitable for blowing into tube.



# MLT MICRO DUCT

DIN CODE: A-DSQ(ZN)2Y 8×1.5 max. 96F

ID: QM5 I



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Cu wire (24 AWG)

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	6.6 ± 0.4	mm	EN 60811-1-1	
Cable weight	43	kg/km		- calculated
Outer jacket thickness	0.5 ± 10 %	mm		
Loose tube diameter	1.5	mm		
Max. tensile strength	2,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test	1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is certified for blowing into tube 14/10.

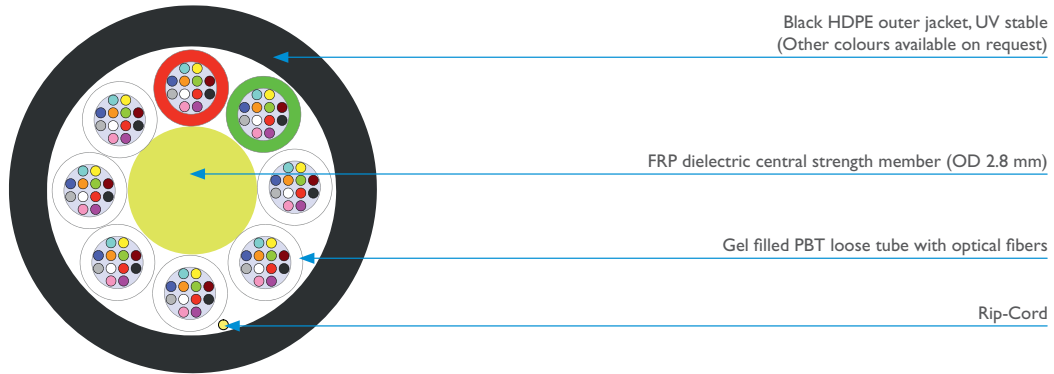
3

3.2

# MLT MICRO DUCT

DIN CODE:A-DQ(ZN)2Y 8×1.7 max. 97F

ID: PM01



3

3.2

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	2,500 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	15× cable diameter (no load)
		*E11B	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation	*F1	-15 °C to +50 °C
	Operation		-40 °C to +70 °C
	Storage		-40 °C to +70 °C
Cable informative nominal weight (calc.)			49 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			1.7 mm
Outer jacket thickness			0.5 ± 0.2 mm
Cable outer diameter			7.2 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

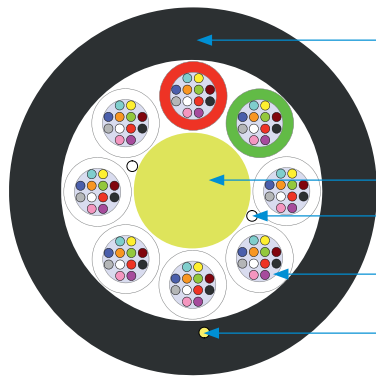
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE: J/A-DQ(ZN)H 8×1.7 max. 96F

ID: PM02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

FRP dielectric central strength member (OD 2.8 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit	
Max. tensile strength	*E1 A	2,500 N	
Crush resistance	*E3	2,000 N/10 cm	
Impact resistance	*E4	3 impacts (w/20 Nm)	
Min. bend radius	*E1   A	15× cable diameter (no load)	
	*E1   B	20× cable diameter (load)	
Moisture resistance	*F5	passed	
Compound flow	*E14	30 cm/24 hrs/70 °C passed	
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C
			-40 °C to +70 °C
			-40 °C to +70 °C
Cable informative nominal weight (calc.)		84 kg/km	
Standard put-up length		2,100 m; 4,100 m	
Packaging		Plywood drum	
Loose tube diameter		1.7 mm	
Outer jacket thickness		1.2 ± 0.2 mm	
Cable outer diameter		8.6 ± 0.4 mm (measured acc. to EN 60811-1-1)	

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

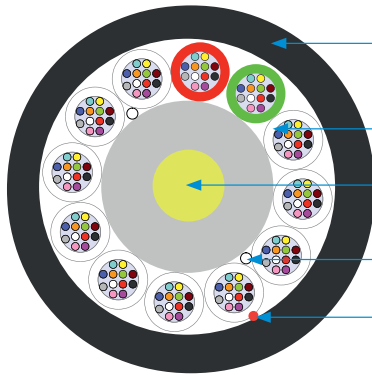
3

3.2

# MLT MICRO DUCT

DIN CODE:A-DQ(ZN)2Y 12×1.5 max. 144F

ID:WM01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 4.5 mm)

Waterblocking yarn

Rip-Cord

3

3.2

## Mechanical and Environmental properties

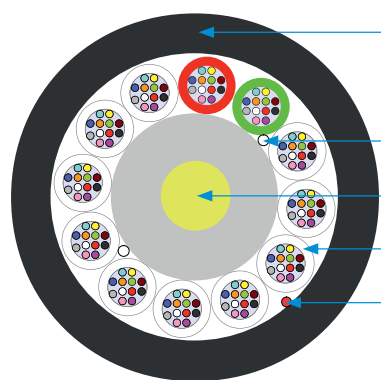
Test		Value	Unit	Method	Comment
Cable outer diameter		8.5 ± 0.4	mm	EN 60811-1-1	
Cable weight		63	kg/km		- calculated
Outer jacket thickness		min. 0.45	mm		
Loose tube diameter		1.5	mm		
Coefficient of friction		0.12			
Max. tensile strength		3,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 1,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE: J/A-DQ(ZN)H 12×1.5 max. 144F

ID: WM02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 4.5 mm)

Gel filled loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		9.5 ± 0.4	mm	EN 60811-1-1	
Cable weight		92	kg/km		- calculated
Outer jacket thickness		1.0	mm		
Loose tube diameter		1.5	mm		
Max. tensile strength		3,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 1,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test		1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

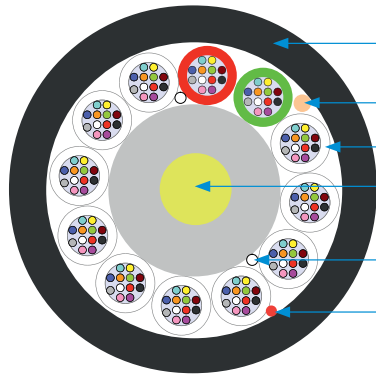
3

3.2

# MLT MICRO DUCT

DIN CODE: A-DSQ(ZN)2Y 12×1.5 max. 144F

ID: WM5 I



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Cu wire (24 AWG)

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 4.5 mm)

Waterblocking yarn

Rip-Cord

3

3.2

## Mechanical and Environmental properties

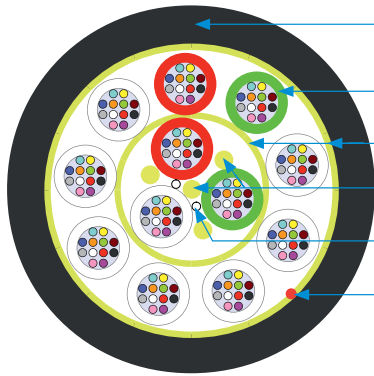
Test	Value	Unit	Method	Comment
Cable outer diameter	8.6 ± 0.4	mm	EN 60811-1-1	
Cable weight	56	kg/km		- calculated
Outer jacket thickness	0.5 ± 10 %	mm		
Loose tube diameter	1.5	mm		
Max. tensile strength	3,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 1,500N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test	1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE:A-DQ(ZN)2Y 12×1.5 max. 144F

ID: Z202



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking aramid yarn

FRP dielectric strength member (OD 0.5 mm)

Waterblocking yarn

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		7.7 ± 0.2	mm	EN 60811-1-1	
Cable weight		44	kg/km		- calculated
Outer jacket thickness		0.5-0.6	mm		
Loose tube diameter		1.5	mm		
Max. tensile strength		450	N	EN 60794-1-2-E1	- max. fiber strain 0.5 % - long term 80 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		120	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		70	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

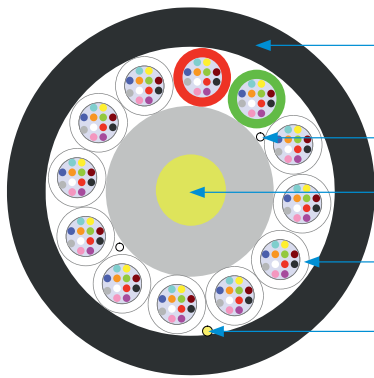
3

3.2

# MLT MICRO DUCT

DIN CODE:A-DQ(ZN)2Y 12×1.7 max. 144F

ID: RM01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking yarn

FRP Central strength member (OD 2.5 mm), PE coated (OD 5.0 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord

3

3.2

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	3,000 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	15× cable diameter (no load)
		*E11B	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage		-15 °C to +50 °C
			-40 °C to +70 °C
			-40 °C to +70 °C
Cable informative nominal weight (calc.)			76 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			1.7 mm
Outer jacket thickness			0.5 ± 0.2 mm
Cable outer diameter			9.4 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

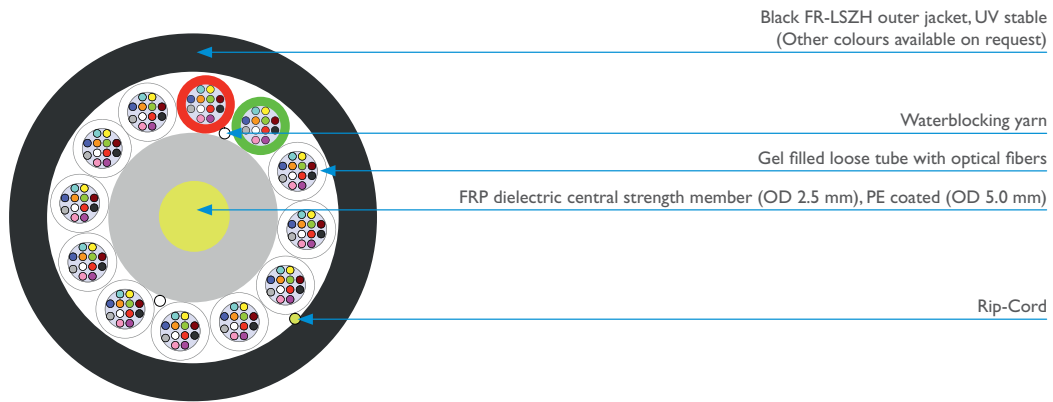
Cable life time – minimum 30 years. This cable is suitable for blowing into tube.



# MLT MICRO DUCT

DIN CODE:J/A-DQ(ZN)H 12×1.7 max. 144F

ID: RM02



3

3.2

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1 A	3,000 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E1   A	15× cable diameter (no load)
	*E1   B	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		120 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		1.7 mm
Outer jacket thickness		1.2 ± 0.2 mm
Cable outer diameter		10.8 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

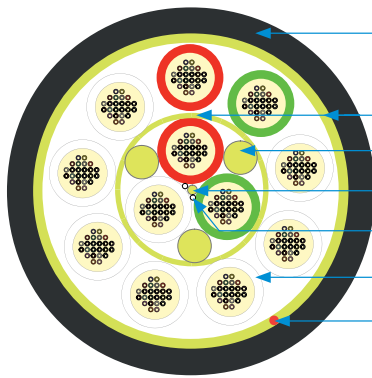
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE: A-DQ(ZN)2Y 12×2.3 max. 288F

ID: Z036



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Fixation Waterblocking aramid yarn

FRP dielectric central strength member (OD 1.0 mm)

FRP dielectric central strength member (OD 0.5 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

3

3.2

## Mechanical and Environmental properties

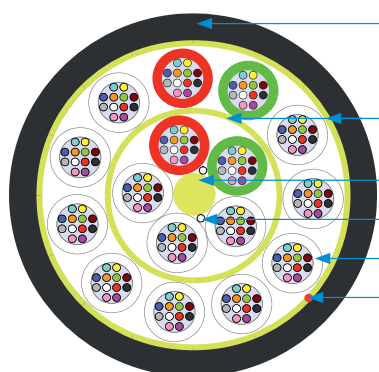
Test	Value	Unit	Method	Comment
Cable outer diameter	10.7 ± 0.2	mm	EN 60811-1-1	
Cable weight	87	kg/km		- calculated
Outer jacket thickness	0.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	1,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 100 N - no fiber strain for term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	1,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

# MLT MICRO DUCT

DIN CODE:A-DQ(ZN)2Y 16×1.5 max. 192F

ID:Z108



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Fixation waterblocking aramid yarn

FRP dielectric central strength member (OD 1.0 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord

3

3.2

## Mechanical and Environmental properties

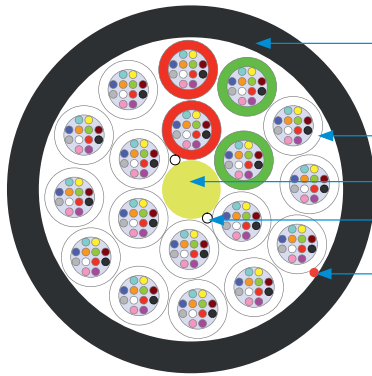
Test		Value	Unit	Method	Comment
Cable outer diameter		8.0 ± 0.3	mm	EN 60811-1-1	
Cable weight		53	kg/km		- calculated
Outer jacket thickness		0.5	mm		
Loose tube diameter		1.5	mm		
Max. tensile strength		700	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 60 N - no fiber strain for term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for Air-blowing.

# MLT MICRO DUCT

DIN CODE: A-DQ(ZN)2Y 18×1.5 max. 216F

ID: EM01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

FRP central strength member (OD 1.7 mm)

Waterblocking yarn

Rip-Cord

3

3.2

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	1,000 N
Crush resistance		*E3	1,500 N/10 cm
Impact resistance		*E4	3 impacts (w/10 Nm)
Min. bend radius		*E11A	15× cable diameter (no load)
		*E11B	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation	*F1	-15 °C to +50 °C
	Operation		-30°C to +70 °C
	Storage		-40 °C to +70 °C
Cable informative nominal weight (calc.)			63 kg/km
Standard put-up length			2,100 m ± 5 %
Packaging			Plywood drum
Loose tube diameter			1.5 mm
Outer jacket thickness			0.5 ± 0.15 mm
Cable outer diameter			8,6 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

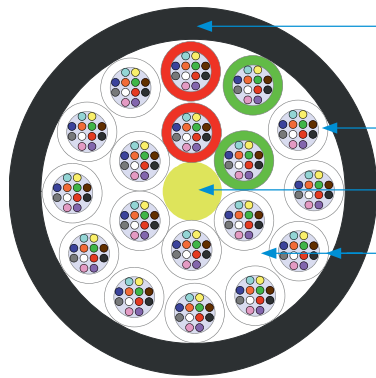
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE:A-DQ(ZN)2Y 18×1.7 max. 192F

ID:VM01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 1.7 mm)

Waterblocking aramid yarn

3

3.2

## Mechanical and Environmental properties

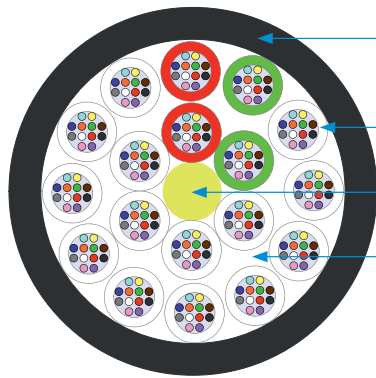
Test		Value	Unit	Method	Comment
Cable outer diameter		9.5 ± 0.5	mm	EN 60811-1-1	
Cable weight		74	kg/km		- calculated
Outer jacket thickness		0.4-0.5	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 290 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE: J/A-DQ(ZN)H 18×1.7 max. 192F

ID:VM02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 1.7 mm)

Waterblocking aramid yarn

3

3.2

## Mechanical and Environmental properties

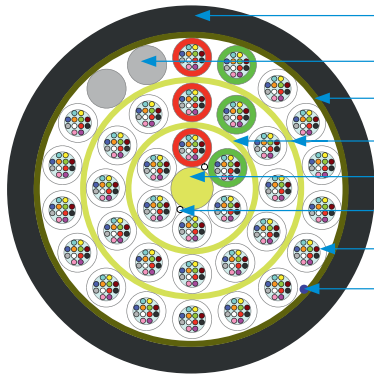
Test		Value	Unit	Method	Comment
Cable outer diameter		10.5 ± 0.5	mm	EN 60811-1-1	
Cable weight		1.07	kg/km		- calculated
Outer jacket thickness		1.0	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 290 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0,1 dB at 1550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE:A-DQ(ZN)2Y 36×1.7 max. 432F

ID: Z022



Black HDPE outer jacket, UV stable  
(Other colours available on request)

PE filler

Water-swellable tape

Fixation waterblocking aramid yarn

FRP dielectric central strength member (OD 1.7 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

The picture represents a cable with 408 fibers.

3

3.2

## Mechanical and Environmental properties

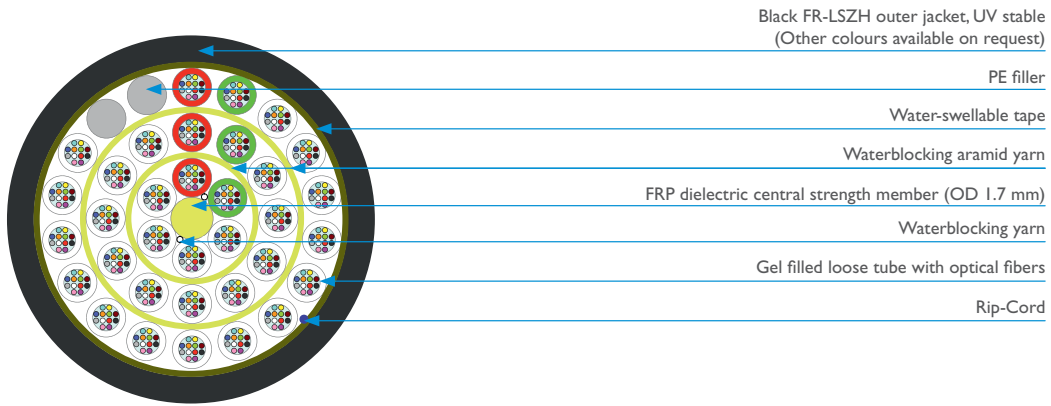
Test		Value	Unit	Method	Comment
Cable outer diameter		14.3 ± 0.4	mm	EN 60811-1-1	
Cable weight		157	kg/km		- calculated
Outer jacket thickness		1.0 ± 10 %	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 320 N - no fiber strain for term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for blowing into tube.

# MLT MICRO DUCT

DIN CODE: J/A-DQ(ZN)H 36× 1.7 max. 432F

ID: Z304



The picture represents a cable with 408 fibers.

Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

PE filler

Water-swellable tape

Waterblocking aramid yarn

FRP dielectric central strength member (OD 1.7 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

3

3.2

## Mechanical and Environmental properties

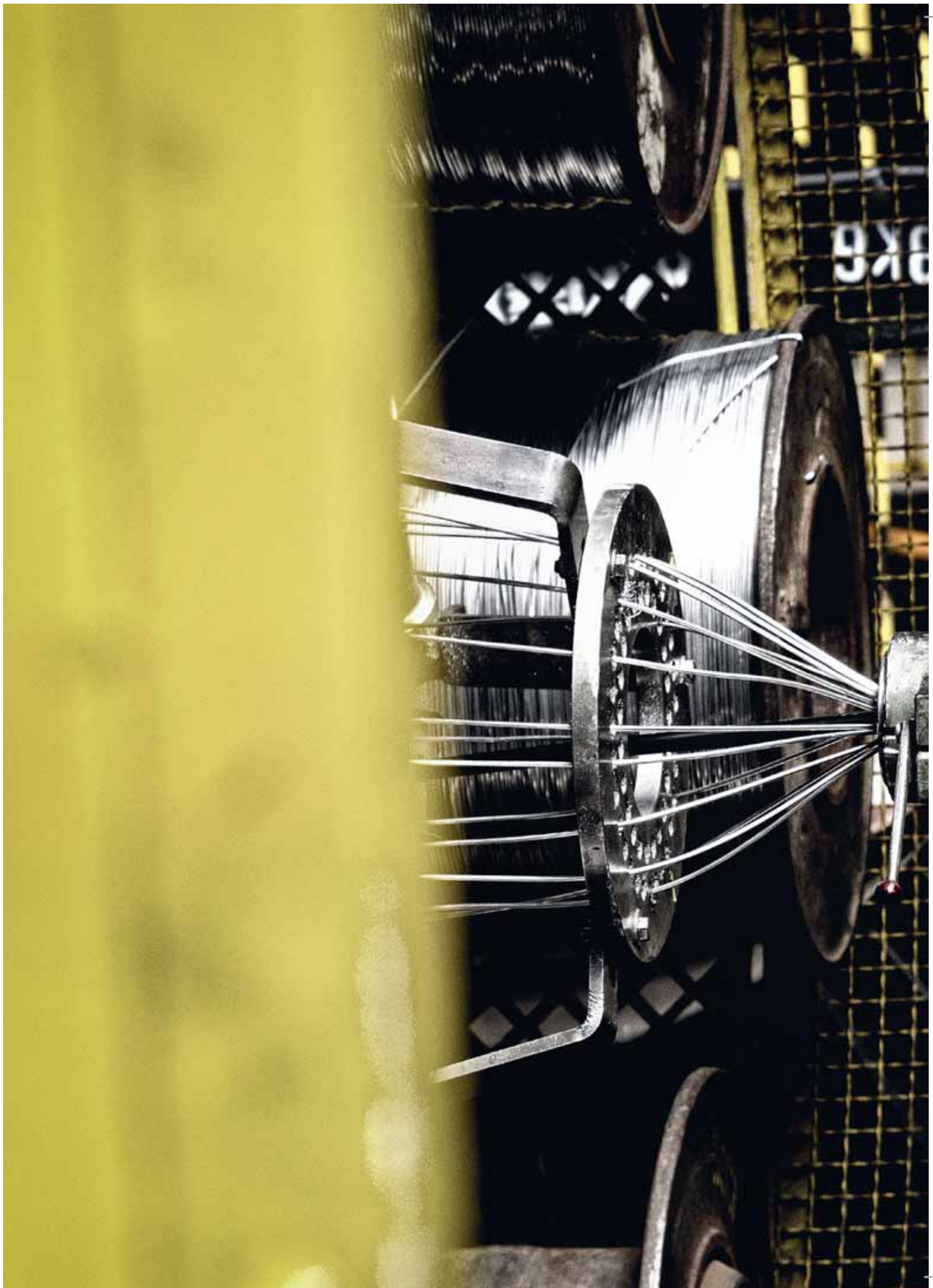
Test	Value	Unit	Method	Comment
Cable outer diameter	14.3 ± 0.4	mm	EN 60811-1-1	
Cable weight	215	kg/km		- calculated
Outer jacket thickness	1.5			
Loose tube diameter	1.7	mm		
Max. tensile strength	700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 320 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test	1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (no load)	10	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0,1 dB at 1550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.



**3**

3.2





## 4. DIRECT BURIAL

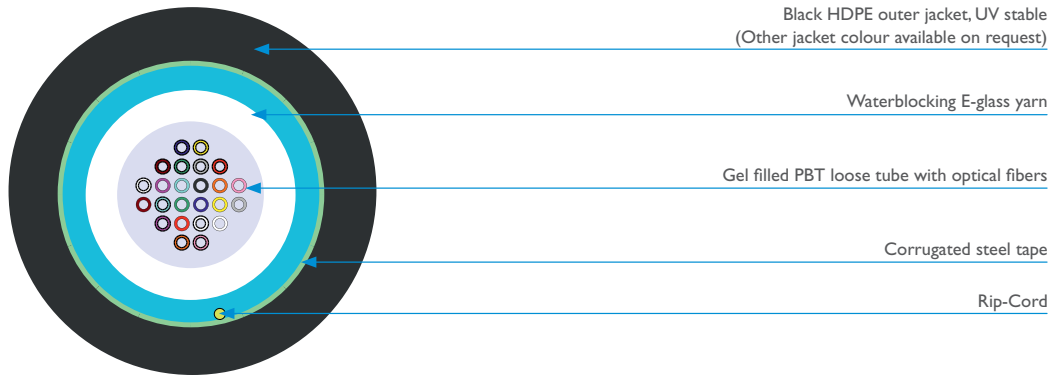
4.1 CLT

4.2 MLT

# CLT CST ARMoured

DIN CODE:A-DQ(BN)(SR)2Y max. 24F

ID: Z144



Black HDPE outer jacket, UV stable  
(Other jacket colour available on request)

Waterblocking E-glass yarn

Gel filled PBT loose tube with optical fibers

Corrugated steel tape

Rip-Cord

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	1,100 N
Crush resistance		*E3	6,000 N/10 cm
Impact resistance		*E4	3 impacts (w/25 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -20 °C to +70 °C -20 °C to +70 °C
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Cable informative nominal weight (calc.)			70 kg/km
Loose tube diameter			3.0 mm
Outer jacket thickness			1.2 ± 0.2 mm
Cable outer diameter			7.7 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor installation. The cable has full rodent protection, direct burial possible.

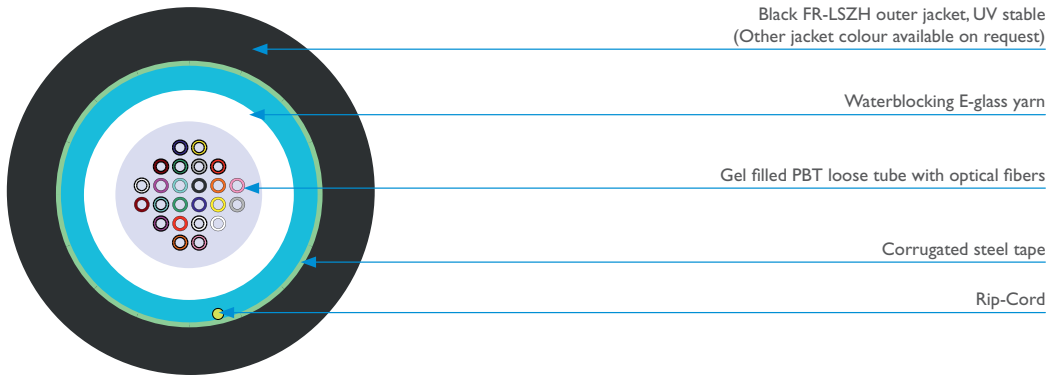
4

4.1

# CLT CST ARMoured

DIN CODE: J/A-DQ(BN)(SR)H max. 24F

ID: Z145



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	1,100 N
Crush resistance	*E3	6,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-20 °C to +70 °C
Standard put-up length		-20 °C to +70 °C
Packaging		2,100 m; 4,100 m
Cable informative nominal weight (calc.)		Plywood drum
Loose tube diameter		87 kg/km
Outer jacket thickness		3.0 mm
Cable outer diameter		1.3 ± 0.2 mm
		7.9 ± 0.4 mm
		(measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor installation. The cable has full rodent protection, direct burial possible.

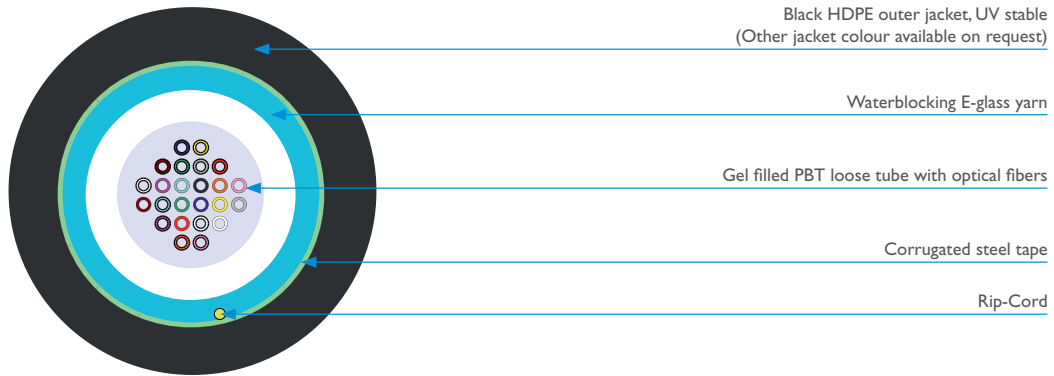
4

4.1

# CLT CST ARMoured

DIN CODE: A-DQ(BN)(SR)2Y max. 24F

ID: BH01



Black HDPE outer jacket, UV stable  
(Other jacket colour available on request)

Waterblocking E-glass yarn

Gel filled PBT loose tube with optical fibers

Corrugated steel tape

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	2,500 N
Crush resistance	*E3	10 kN/10 cm
Impact resistance	*E4	3 impacts (w/29 Nm)
Min. bend radius	*E11a	20× cable diameter (no load)
	*E11b	15× cable diameter (load)
Torsion	*E7	180 °/500 mm/50 N/2 cycles
Repeat bending	*E6	50 mm/50 N/10 cycles
Kink	*E10	100 mm
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +40 °C
		-20 °C to +70 °C
		-20 °C to +70 °C
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Cable informative nominal weight (calc.)		98 kg/km
Loose tube diameter		3.0 mm
Outer jacket thickness		1.2 (min. 1.0) mm
Cable outer diameter		9.9 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor installation. The cable has full rodent protection, direct burial possible.

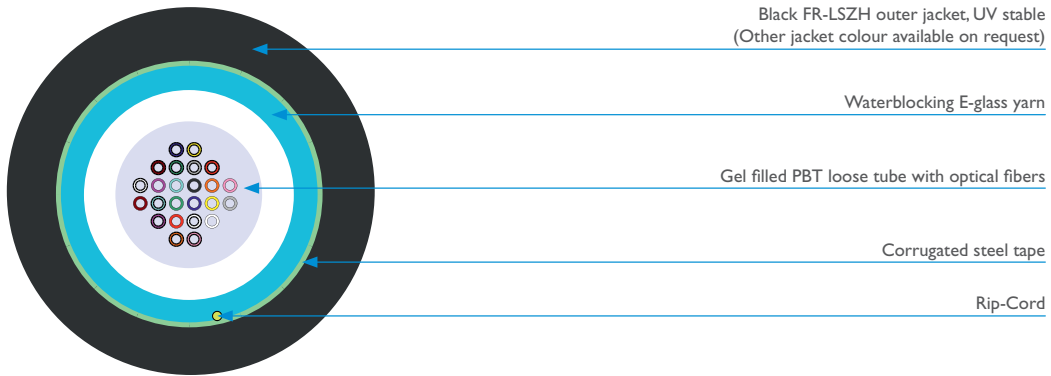
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4.1

# CLT CST ARMoured

DIN CODE: J/A-DQ(BN)(SR)H max. 24F

ID: BH02



Black FR-LSZH outer jacket, UV stable  
(Other jacket colour available on request)

Waterblocking E-glass yarn

Gel filled PBT loose tube with optical fibers

Corrugated steel tape

Rip-Cord

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	2,500 N
Crush resistance		*E3	10 kN/10 cm
Impact resistance		*E4	3 impacts (w/29 Nm)
Min. bend radius		*E11a	20x cable diameter (no load)
		*E11b	15x cable diameter (load)
Torsion		*E7	180 °/500 mm/50 N/2 cycles
Repeat bending		*E6	50 mm/50 N/10 cycles
Kink		*E10	100 mm
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation	*F1	-15 °C to +40 °C
	Operation		-20 °C to +70 °C
	Storage		-20 °C to +70 °C
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Cable informative nominal weight (calc.)			124 kg/km
Loose tube diameter			3.0 mm
Outer jacket thickness			1.3 (min. 1.1) mm
Cable outer diameter			10.1 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor installation. The cable has full rodent protection, direct burial possible.

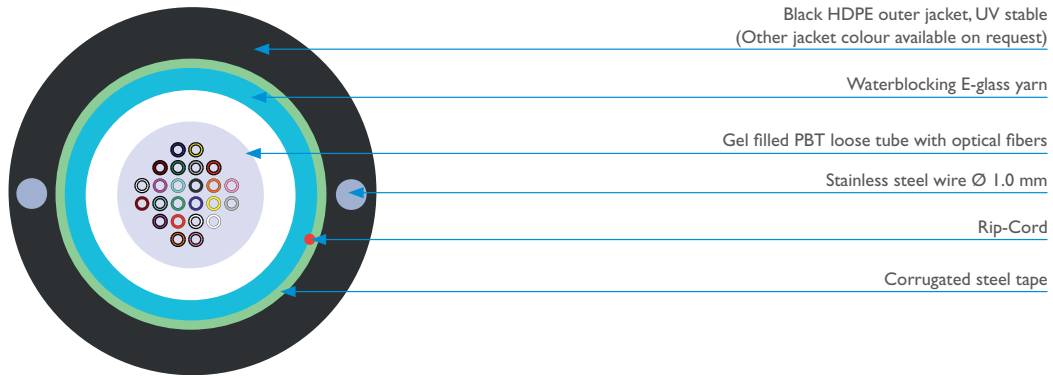
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4.1

# CLT CST ARMoured

DIN CODE: A-DQ(BN)(ZM)(SR)2Y max. 24F

ID: BH9I



Black HDPE outer jacket, UV stable  
(Other jacket colour available on request)

Waterblocking E-glass yarn

Gel filled PBT loose tube with optical fibers

Stainless steel wire Ø 1.0 mm

Rip-Cord

Corrugated steel tape

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	9.7 ± 0.5	mm	EN 60811-1-1	
Cable weight	106	kg/km		- calculated
Outer jacket thickness	2.2	mm		
Loose tube diameter	3.0	mm		
Max. allowable tension	3,000	N	EN 60794-1-2-E1	- long term 1,000 N - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	10	kN	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - dwell time acc. EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor installation, direct burial possible.

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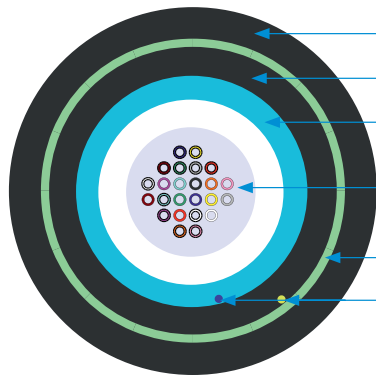
4.1



# CLT CST ARMoured

DIN CODE:A-DQ(BN)2Y(SR)2Y max. 24F

ID: BIPI



Black HDPE outer jacket, UV stable  
(Other jacket colour available on request)

Black MDPE inner jacket, UV stable

Waterblocking E-glass yarn

Gel filled PBT loose tube with optical fibers

Corrugated steel tape

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	1,100 N
Crush resistance	*E3	5,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed (inner cable only)
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-20 °C to +70 °C
		-20 °C to +70 °C
Cable informative nominal weight (calc.)		108 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood or Solid wooden drum
Loose tube diameter		3.0 mm
Inner jacket thickness		0.8 ± 0.2 mm
Outer jacket thickness		1.5 ± 0.3 mm
Cable outer diameter		10.5 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has full rodent protection, direct burial possible.

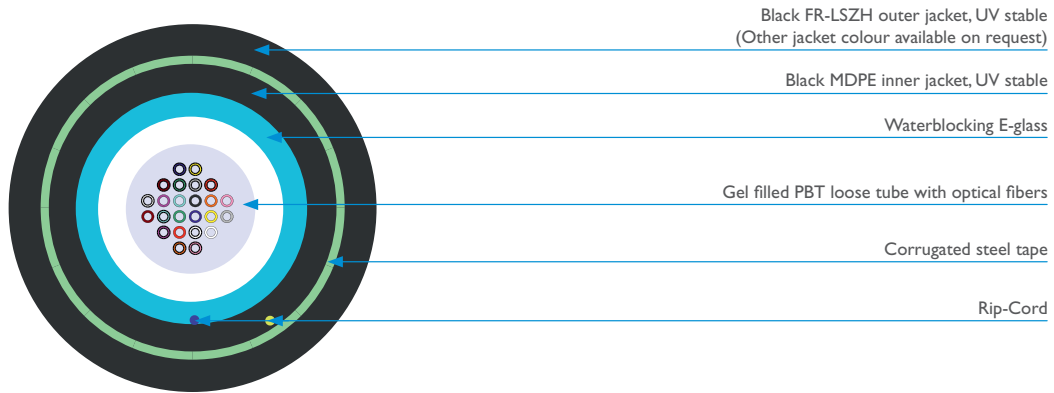
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4.1

# CLT CST ARMoured

DIN CODE: J/A-DQ(BN)2Y(SR)H max. 24F

ID: BIP2



Black FR-LSZH outer jacket, UV stable  
(Other jacket colour available on request)

Black MDPE inner jacket, UV stable

Waterblocking E-glass

Gel filled PBT loose tube with optical fibers

Corrugated steel tape

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	1,100 N
Crush resistance	*E3	5,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed (inner cable only)
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C -20 °C to +70 °C -20 °C to +70 °C
Cable informative nominal weight (calc.)		135 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood or Solid wooden drum
Loose tube diameter		3.0 mm
Inner jacket thickness		0.8 ± 0.2 mm
Outer jacket thickness		1.5 ± 0.3 mm
Cable outer diameter		10.5 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has full rodent protection, direct burial possible.

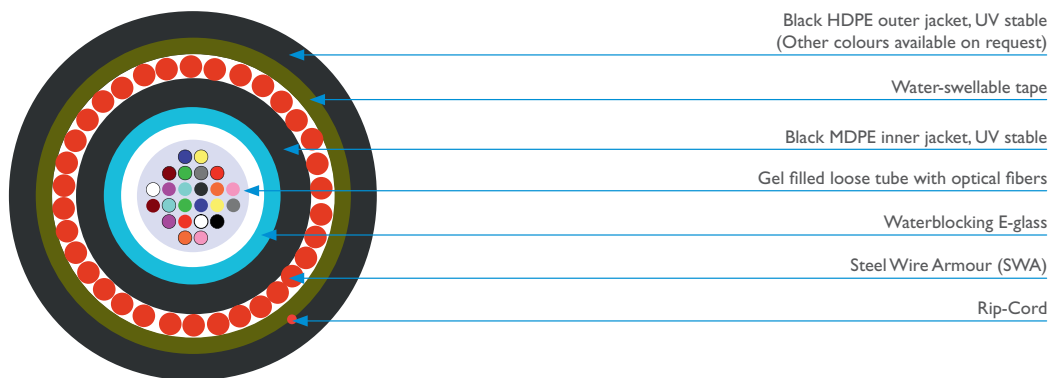
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4.1

# CLT SWA

DIN CODE: A-DQ(BN)2YB2Y (R0.63vzk) max. 24F

ID: BWPI



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		10.3 ± 0.4	mm	EN 60811-1-1	
Cable weight		150	kg/km		- calculated
Inner jacket thickness		1.0 ± 0.2			
Outer jacket thickness		1.2 ± 0.3	mm		
Loose tube diameter		3	mm		
Max. tensile strength		4,000	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 I b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation
Max. installation depth		300 m			

Cable life time – minimum 30 years. This cable is suitable for direct burial or for installation into the sea.

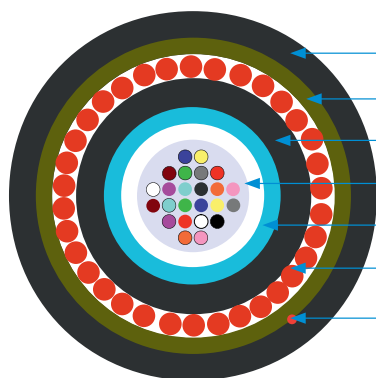
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4.1

# CLT SWA

DIN CODE: J/A-DQ(BN)2YBH WBF (R0.63vzk) max. 24F

ID: BWP2



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Water-swellable tape

Black MDPE inner jacket, UV stable

Gel filled loose tube with optical fibers

Waterblocking E-glass

Steel Wire Armour (SWA)

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		10.7 ± 0.4	mm	EN 60811-1-1	
Cable weight		182	kg/km		- calculated
Inner jacket thickness		1.0 ± 0.2			
Outer jacket thickness		1.2 ± 0.3	mm		
Loose tube diameter		3	mm		
Max. tensile strength		4,000	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 I b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use, direct burial possible.

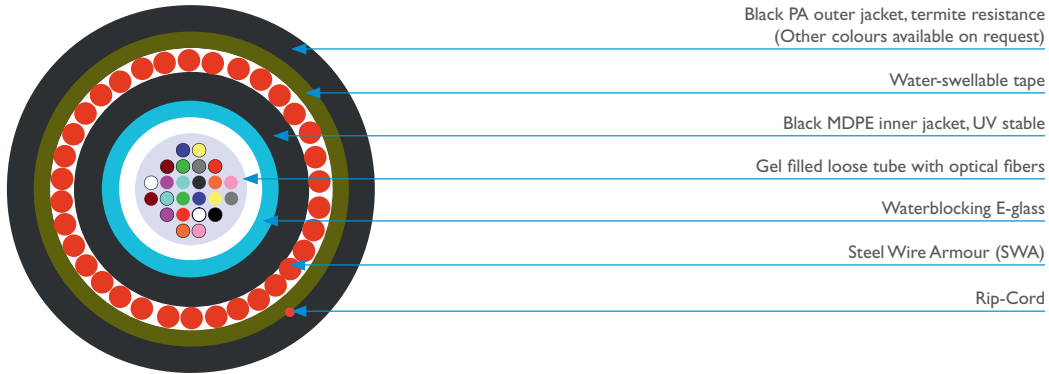
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4.1

# CLT SWA TERMITE RESISTANT

DIN CODE: A-DQ(BN)2YB4Y (R0.63vzk) max. 24F

ID: BWP4



Black PA outer jacket, termite resistance  
(Other colours available on request)

Water-swellaable tape

Black MDPE inner jacket, UV stable

Gel filled loose tube with optical fibers

Waterblocking E-glass

Steel Wire Armour (SWA)

Rip-Cord

## Mechanical and Environmental properties

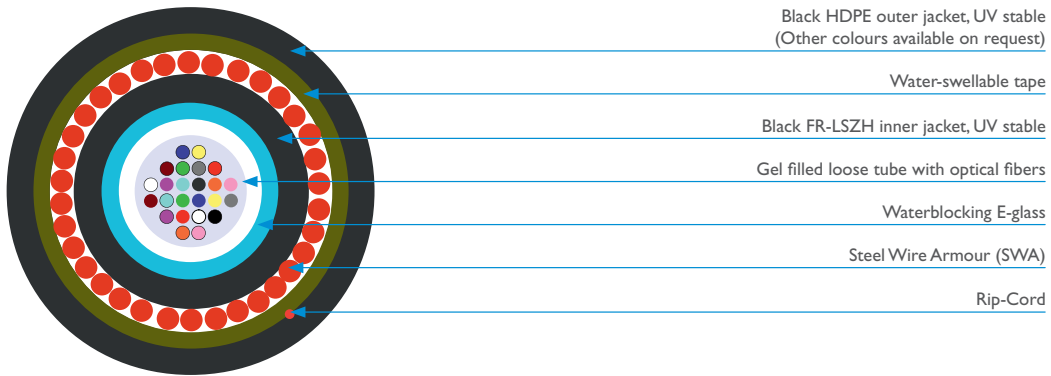
Test		Value	Unit	Method	Comment
Cable outer diameter		9.9 ± 0.5	mm	EN 60811-1-1	
Cable weight		149	kg/km		- calculated
Inner jacket thickness		1.0 ± 0.2			
Outer jacket thickness		1.2 ± 0.3	mm		
Loose tube diameter		3	mm		
Max. tensile strength		4,000	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 I b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use, direct burial possible. Anti-termite protection.

# CLT SWA

DIN CODE: A-DQ(BN)HB2Y (R0.63vzk) max. 24F

ID: BWFI



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		10.3 ± 0.4	mm	EN 60811-1-1	
Cable weight		160	kg/km		- calculated
Inner jacket thickness		1.0 ± 0.2			
Outer jacket thickness		1.2 ± 0.3	mm		
Loose tube diameter		3	mm		
Max. tensile strength		4,000	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use, direct burial possible.

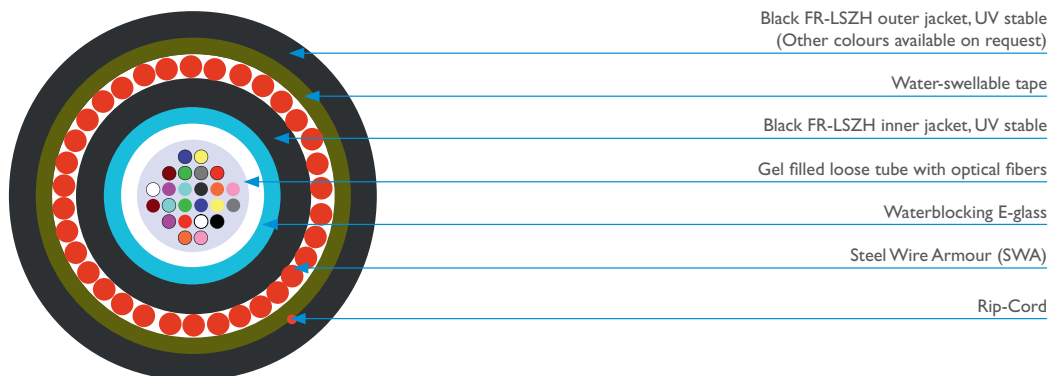
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4.1

# CLT SWA

DIN CODE: J/A-DQ(BN)HBH (R0.63vzk) max. 24F

ID: BWF2



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		10.7 ± 0.3	mm	EN 60811-1-1	
Cable weight		191	kg/km		- calculated
Inner jacket thickness		1.0 ± 0.2			
Outer jacket thickness		1.4 ± 0.3	mm		
Loose tube diameter		3	mm		
Max. tensile strength		4,000	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 I b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use, direct burial possible.

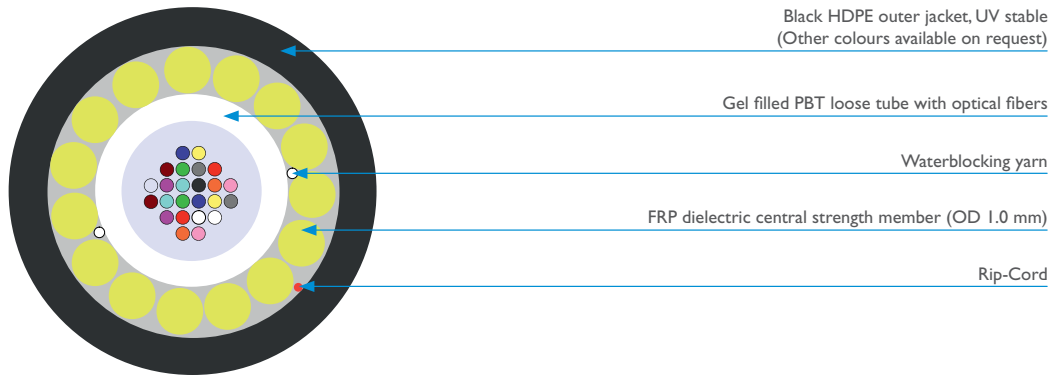
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4.1

# CLT FRP ARMoured

DIN CODE: A-DQ(BN)B2Y (FRPI.0) max. 24F

ID: BF01



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		7.4 ± 0.4	mm	EN 60811-1-1	
Cable weight		53	kg/km		- calculated
Outer jacket thickness		1.2	mm		
Loose tube diameter		3.0	mm		
Max. tensile strength		2,200	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use, direct burial possible. The cable has higher level of rodent protection.

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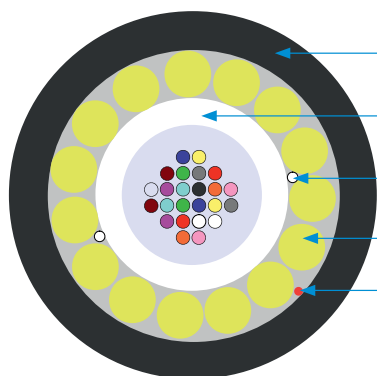
4.1



# CLT FRP ARMoured

DIN CODE: J/A-DQ(BN)BH (FRP1.0) max. 24F

ID: BF02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking yarn

FRP dielectric central strength member (OD 1.0 mm)

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		7.4 ± 0.4	mm	EN 60811-1-1	
Cable weight		66	kg/km		- calculated
Outer jacket thickness		1.2	mm		
Loose tube diameter		3.0	mm		
Max. tensile strength		2,200	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use, direct burial possible. The cable has higher level of rodent protection.

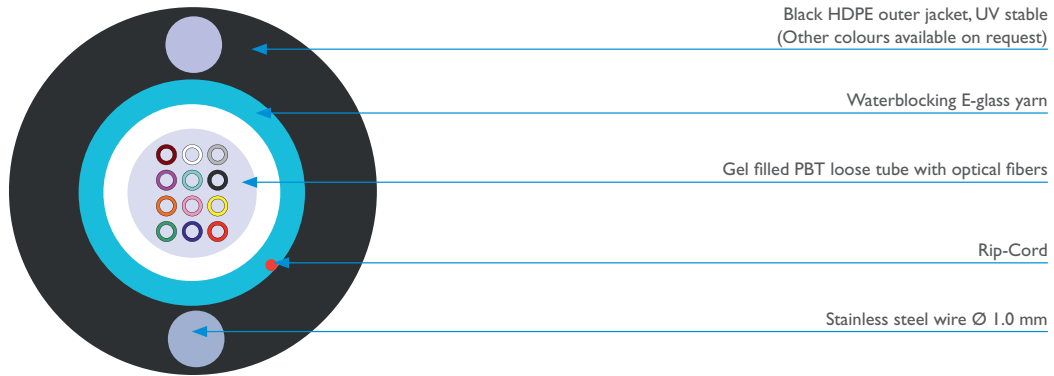
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4.1

# CLT EXTRA STRENGTH MEMBERS

DIN CODE: A-DQ(2ZM)(BN)2Y max. 12F

ID: AE9I



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		6.5 ± 0.4	mm	EN 60811-1-1	
Cable weight		50	kg/km		- calculated
Outer jacket thickness		1.7	mm		
Loose tube diameter		2.5	mm		
Max. tensile strength		3,000	N	EN 60794-1-2-E1	- long term 1,000 N - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		5,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN60974-1-2-E11b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

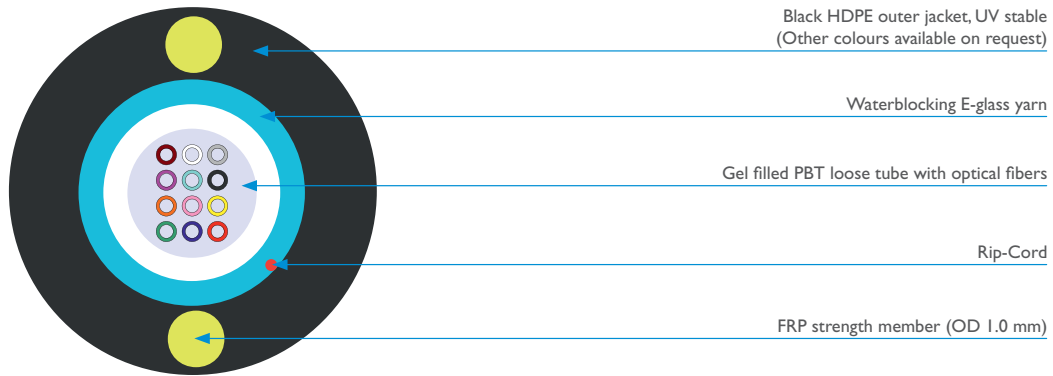
4

4.1

# CLT EXTRA STRENGTH MEMBERS

DIN CODE: A-DQ(2ZN)(BN)2Y max. 12F

ID: AE8I



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	6.5 ± 0.4	mm	EN 60811-1-1	
Cable weight	41	kg/km		- calculated
Outer jacket thickness	1.7	mm		
Loose tube diameter	2.5	mm		
Max. tensile strength	1,500	N	EN 60794-1-2-E1	- long term 700 N - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	5,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

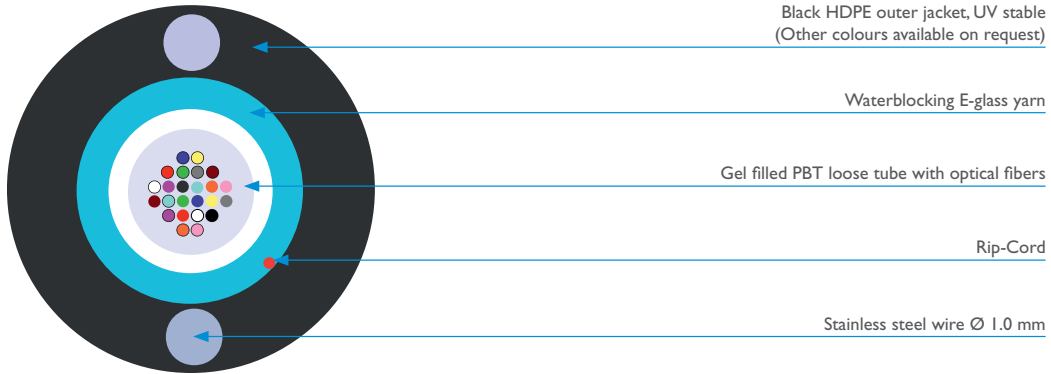
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4.1

# CLT EXTRA STRENGTH MEMBERS

DIN CODE: A-DQ(2ZM)(BN)2Y max. 24F

ID: BE9I



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		7.3 ± 0.4	mm	EN 60811-1-1	
Cable weight		59	kg/km		- calculated
Outer jacket thickness		1.8	mm		
Loose tube diameter		3.2	mm		
Max. tensile strength		3,000	N	EN 60794-1-2-E1	- long term 1,000 N - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		5,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN60974-1-2-E11b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

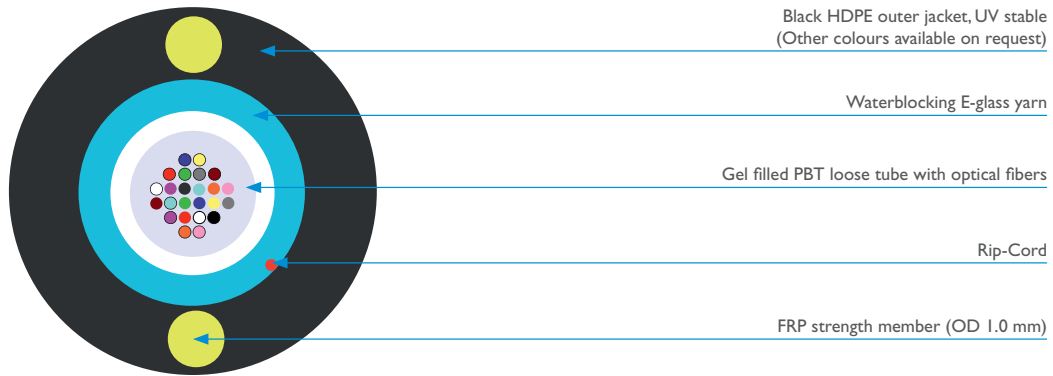
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4.1

# CLT EXTRA STRENGTH MEMBERS

DIN CODE: A-DQ(2ZN)(BN)2Y max. 24F

ID: BE8I



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		7.3 ± 0.4	mm	EN 60811-1-1	
Cable weight		50	kg/km		- calculated
Outer jacket thickness		1.8	mm		
Loose tube diameter		3.2	mm		
Max. tensile strength		1,500	N	EN 60794-1-2-E1	- long term 700 N - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		5,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 I b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

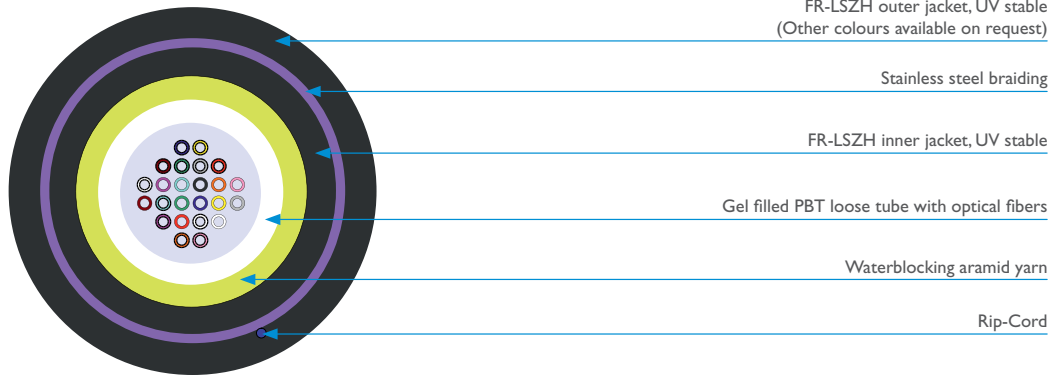
4

4.1

# CLT BRAIDED ARMoured

DIN CODE: J/A-DQ(ZN)H(Z)H max. 24F

ID: Z275



FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Stainless steel braiding

FR-LSZH inner jacket, UV stable

Gel filled PBT loose tube with optical fibers

Waterblocking aramid yarn

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		8.2 ± 0.4	mm	EN 60811-1-1	
Cable weight		106	kg/km		- calculated
Inner jacket thickness		1.0 ± 0.2	mm		
Outer jacket thickness		1.0 ± 0.2	mm		
Loose tube diameter		3.5	mm		
Max. tensile strength		1,500	N	EN 60794-1-2-E1	- max. fiber strain 0.5 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Crush resistance test		2,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		15	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has full rodent protection.

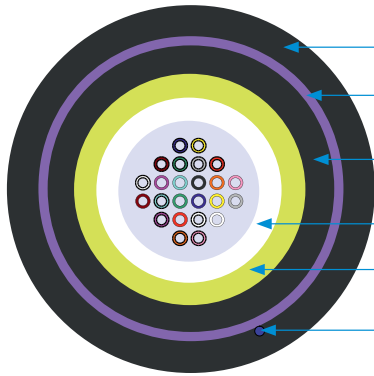
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4.1

# CLT BRAIDED ARMoured

DIN CODE:A-DQ(ZN)2Y(Z)2Y max. 24F

ID: Z276



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Stainless steel braiding

Black MDPE inner jacket, UV stable

Gel filled PBT loose tube with optical fibers

Waterblocking aramid yarn

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		8.2 ± 0.4	mm	EN 60811-1-1	
Cable weight		82	kg/km		- calculated
Inner jacket thickness		1.0 ± 0.2	mm		
Outer jacket thickness		1.0 ± 0.2	mm		
Loose tube diameter		3.5	mm		
Max. tensile strength		1,500	N	EN 60794-1-2-E1	- max. fiber strain 0.5 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Crush resistance test		2,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		15	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -20 to +70 °C -20 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has full rodent protection.

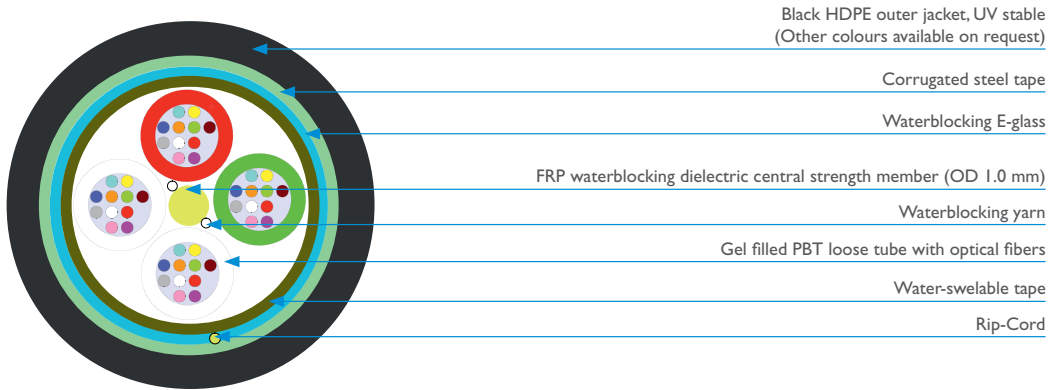
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4.1

# MLT CST

DIN CODE:A-DQ(BN)(SR)2Y 4× 2.3 max. 48F

ID: LH01



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	1,200 N
Crush resistance	*E3	10,000 N/10 cm
Impact resistance	*E4	3 impacts (w/30 Nm)
Min. bend radius	*E11a	20× cable diameter (no load)
Moisture resistance	*E11b	25× cable diameter (load)
Compound flow	*F5	passed
Temperature range	*F1	30 cm/24 hrs/70 °C passed -15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)		127 kg/km
Packaging		Solid wooden drum
Standard put-up length		2,100 m; 4,100 m (± 5 %)
Loose tube nominal diameter		2.3 mm
Outer jacket nominal thickness		1.5 ± 0.2 mm
Cable outer diameter		11.5 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has full rodent protection, direct burial possible.

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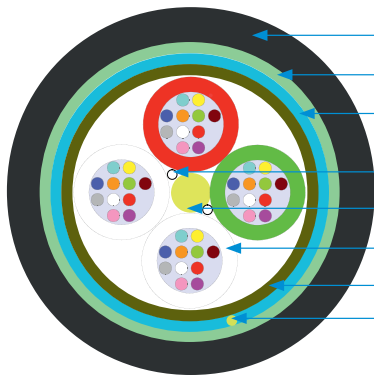
4.2



# MLT CST

DIN CODE: J/A-DQ(BN)(SR)H 4× 2.3 max. 48F

ID: LH02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Corrugated steel tape

Waterblocking E-glass

Waterblocking yarn

FRP dielectric central strength member (OD 1.0 mm)

Gel filled PBT loose tube with optical fibers

Water-swellable tape

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	1,200 N
Crush resistance	*E3	10,000 N/10 cm
Impact resistance	*E4	3 impacts (w/30 Nm)
Min. bend radius	*E11a	20× cable diameter (no load)
	*E11b	25× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow		30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)		153 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Solid wooden drum
Loose tube nominal diameter		2.3 mm
Outer jacket nominal thickness		1.5 ± 0.2 mm
Cable outer diameter		11.5 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has full rodent protection, direct burial possible.

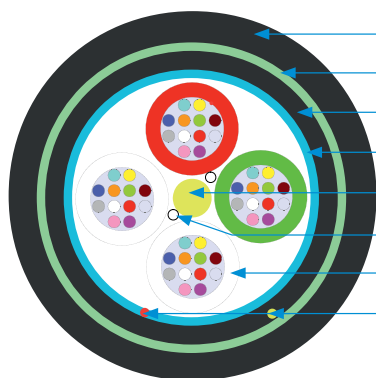
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4.2

# MLT CST

DIN CODE: A-DQ(BN)2Y(SR)2Y 4× 2.3 max. 48F

ID: LIPI



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Corrugated steel tape

Black LDPE inner jacket, UV stable

Waterblocking E-glass

FRP dielectric central strength member (OD 1.0 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		13.5 ± 0.5	mm	EN 60811-1-1	
Cable weight		168	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		1,500	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 250 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 25 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		20	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		25	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has full rodent protection, direct burial possible.

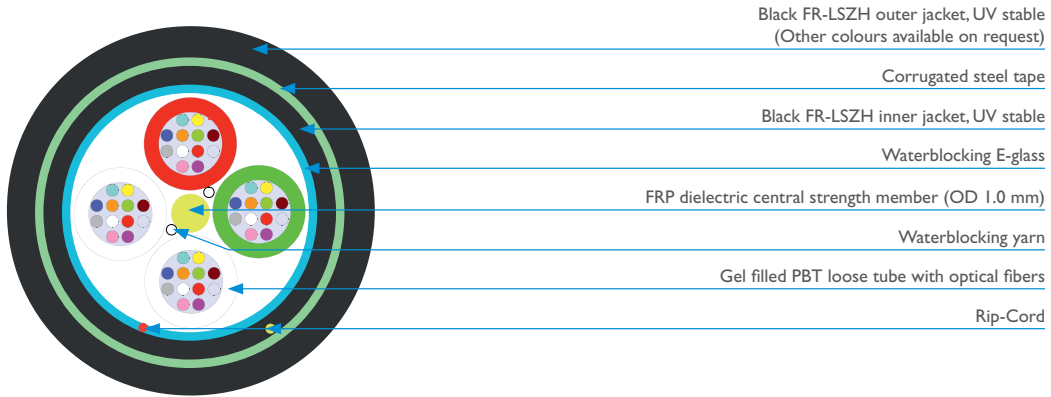
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4.2

# MLT CST

DIN CODE: J/A-DQ(BN)H(SR)H 4× 2.3 max. 48F

ID: LIF2



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Corrugated steel tape

Black FR-LSZH inner jacket, UV stable

Waterblocking E-glass

FRP dielectric central strength member (OD 1.0 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		13.5 ± 0.5	mm	EN 60811-1-1	
Cable weight		216	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		1,500	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 250 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 25 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		20	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		25	× OD	EN 60794-1-2-E1 I b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has full rodent protection, direct burial possible.

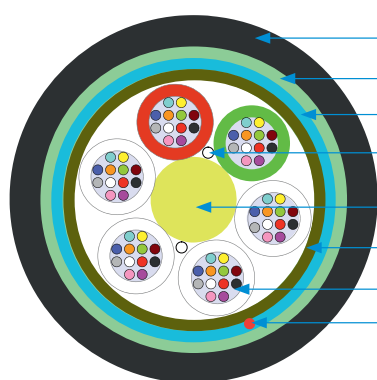
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4.2

# MLT CST

DIN CODE:A-DQ(BN)(SR)2Y 6× 1.7 max. 72F

ID: CH01



Black HDPE outer jacket, UV stable  
(Other jacket colour available on request)

Corrugated steel tape

Waterblocking E-glass

Waterblocking yarn

Waterblocking FRP dielectric central strength member (OD 1.7 mm)

Water – swellable tape

Gel filled PBT loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	10.1 ± 0.4	mm	EN 60811-1-1	
Cable weight	107	kg/km		- calculated
Outer jacket thickness	1.3	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	2,600	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 800 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 2 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor. The cable has full rodent protection, direct burial possible.

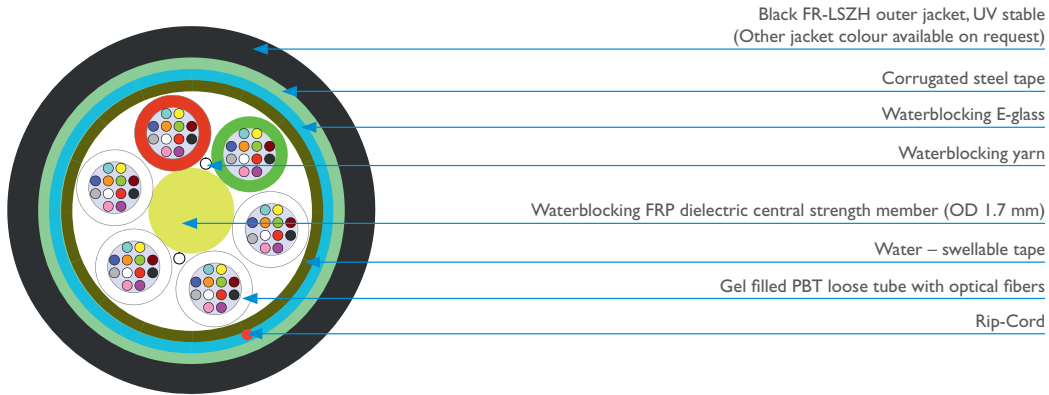
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4.2

# MLT CST

DIN CODE: J/A-DQ(BN)(SR)H 6× 1.7 max. 72F

ID: CH02



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	10.1 ± 0.4	mm	EN 60811-1-1	
Cable weight	129	kg/km		- calculated
Outer jacket thickness	1.3	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	2,600	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 800 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 2 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor. The cable has full rodent protection, direct burial possible.

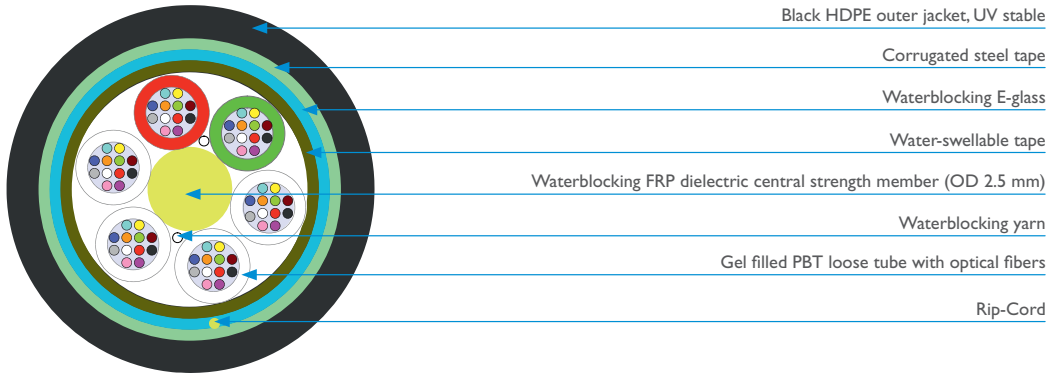
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4.2

# MLT CST

DIN CODE:A-DQ(BN)(SR)2Y 6× 2.3 max. 72F

ID: FH01



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	2,400 N
Crush resistance	*E3	10,000 N/10 cm
Impact resistance	*E4	3 impacts (w/30 Nm)
Min. bend radius	*E11a	20× cable diameter (no load)
Moisture resistance	*E11b	25× cable diameter (load)
Compound flow	*F5	passed
Temperature range	*F1	30 cm/24 hrs/70 °C passed -15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)		154 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Solid wooden drum
Loose tube nominal diameter		2.3 mm
Outer jacket nominal thickness		1.5 ± 0.2 mm
Cable outer nominal diameter		12.5 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has full rodent protection, direct burial possible.

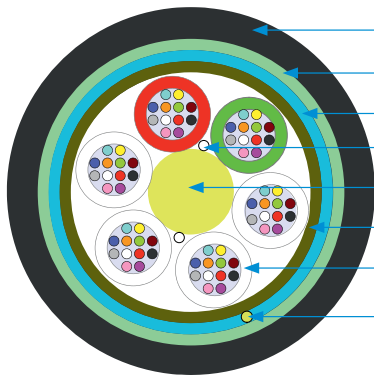
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4.2

# MLT CST

DIN CODE: J/A-DQ(BN)(SR)H 6× 2.3 max. 72F

ID: FH02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Corrugated steel tape

Waterblocking E-glass

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm)

Water-swellable tape

Gel filled PBT loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	2,400 N
Crush resistance	*E3	10,000 N/10 cm
Impact resistance	*E4	3 impacts (w/30 Nm)
Min. bend radius	*E11a	20× cable diameter (no load)
	*E11b	25× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow		30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		184 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Solid wooden drum
Loose tube nominal diameter		2.3 mm
Outer jacket nominal thickness		1.5 ± 0.2 mm
Cable outer nominal diameter		12.5 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has full rodent protection, direct burial possible.

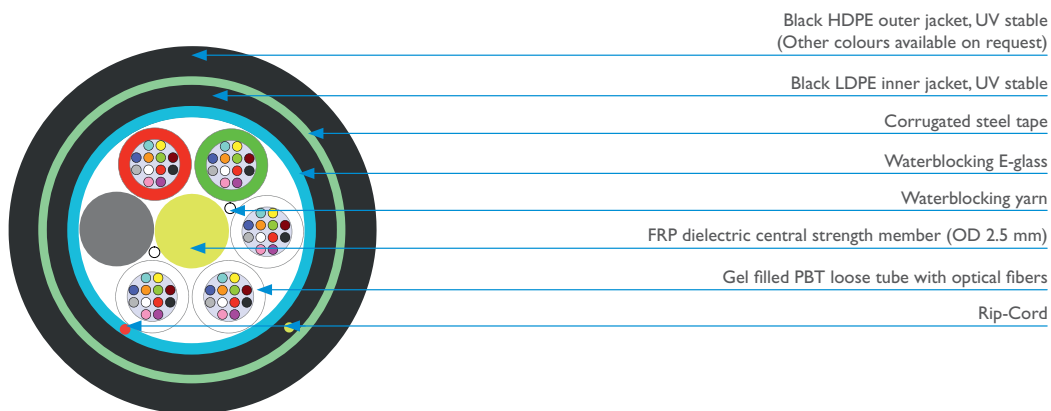
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4.2

# MLT CST

DIN CODE:A-DQ(BN)2Y(SR)2Y 6× 2.3 max. 72F

ID: FIPI



The picture represents a cable with 60 fibers.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		14.5 ± 0.5	mm	EN 60811-1-1	
Cable weight		199	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		3,300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,800 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 25 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		20	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		25	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has full rodent protection, direct burial possible.

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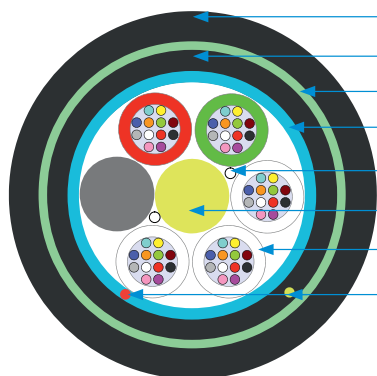
4.2



# MLT CST

DIN CODE: J/A-DQ(BN)H(SR)H 6× 2.3 max. 72F

ID: FIF2



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Black FR-LSZH inner jacket, UV stable

Corrugated steel tape

Waterblocking E-glass

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord

The picture represents a cable with 60 fibers.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		14.5 ± 0.5	mm	EN 60811-1-1	
Cable weight		254	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		3,300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,800 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 25 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		20	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		25	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has full rodent protection, direct burial possible.

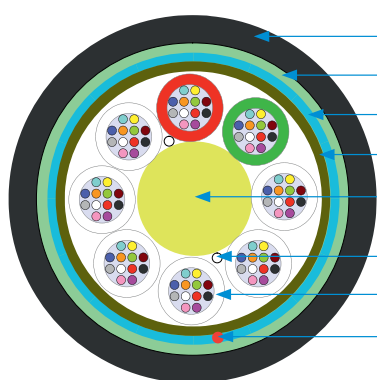
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4.2

# MLT CST

DIN CODE: A-DQ(BN)(SR)2Y 8× 1.7 max. 96F

ID: PH01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Corrugated steel tape

Waterblocking E-glass yarn

Water-swellable tape

FRP dielectric central strength member (OD 2.8 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	11.1 ± 0.4	mm	EN 60811-1-1	
Cable weight	131	kg/km		- calculated
Outer jacket thickness	1.3	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	5,400	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 2,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 2 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor. The cable has full rodent protection, direct burial possible.

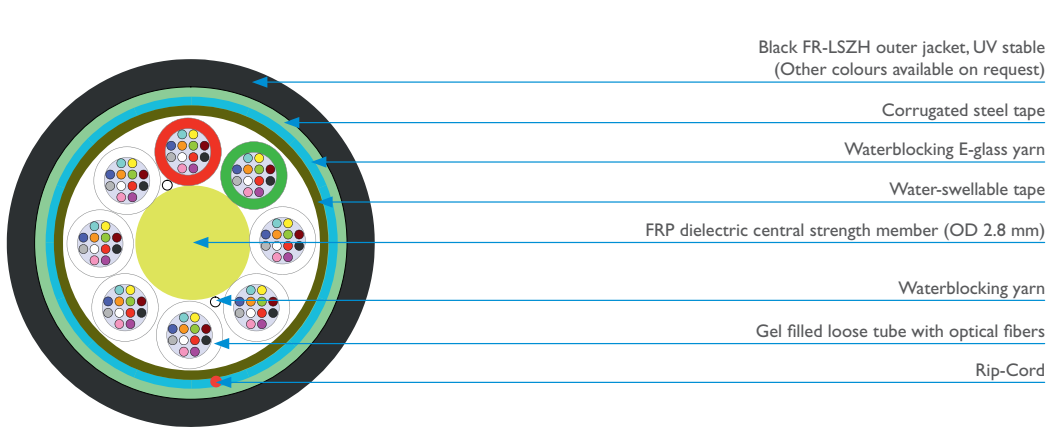
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4.2

# MLT CST

DIN CODE: J/A-DQ(BN)(SR)H 8× 1.7 max. 96F

ID: PH02



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	11.1 ± 0.4	mm	EN 60811-1-1	
Cable weight	156	kg/km		- calculated
Outer jacket thickness	1.3	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	5,400	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 2,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 2 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for Indoor or outdoor. The cable has full rodent protection, direct burial possible.

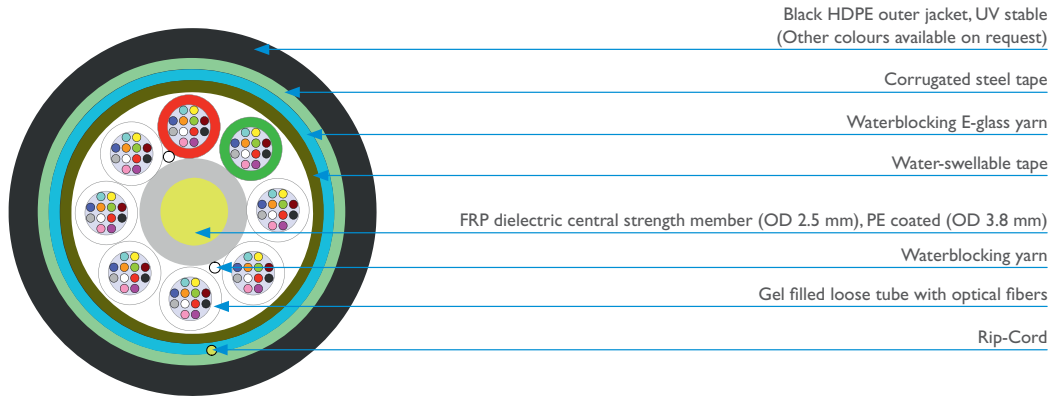
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4.2

# MLT CST

DIN CODE:A-DQ(BN)(SR)2Y 8× 2.3 max. 96F

ID: GH01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Corrugated steel tape

Waterblocking E-glass yarn

Water-swellable tape

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 3.8 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	3,200 N
Crush resistance	*E3	10,000 N/10 cm
Impact resistance	*E4	3 impacts (w/30 Nm)
Min. bend radius	*E11a	20× cable diameter (no load)
Moisture resistance	*E11b	25× cable diameter (load)
Compound flow	*F5	passed
Temperature range	*F1	30 cm/24 hrs/70 °C passed -15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)		189 kg/km
Standard put-up length		2,100 m; 4,100 m (± 5 %)
Packaging		Solid wooden drum
Loose tube diameter		2.3 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		14.5 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has full rodent protection, direct burial possible.

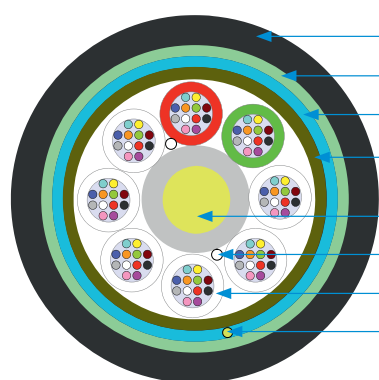
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4.2

# MLT CST

DIN CODE: J/A-DQ(BN)(SR)H 8× 2.3 max. 96F

ID: GH02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Corrugated steel tape

Waterblocking E-glass

Water-swellaable tape

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 3.8 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	3,200 N
Crush resistance	*E3	10,000 N/10 cm
Impact resistance	*E4	3 impacts (w/30 Nm)
Min. bend radius	*E11a	20× cable diameter (no load)
	*E11b	25× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow		30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		222 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Solid wooden drum
Loose tube diameter		2.3 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		14.5 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has full rodent protection, direct burial possible.

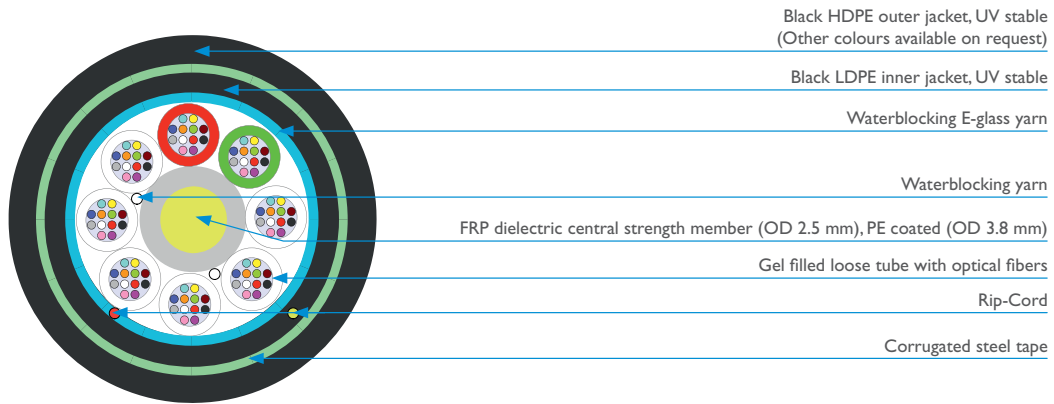
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4.2

# MLT CST

DIN CODE: A-DQ(BN)2Y(SR)2Y 8× 2.3 max. 96F

ID: GIPI



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	16.5 ± 0.5	mm	EN 60811-1-1	
Cable weight	243	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	4,800	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 2,600 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 25 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	20	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	25	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has full rodent protection, direct burial possible.

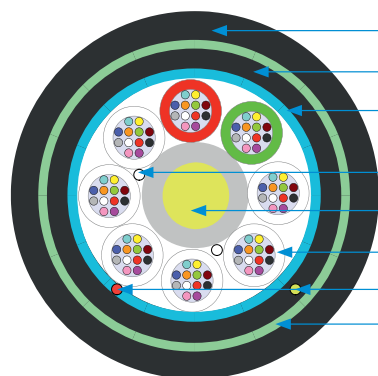
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4.2

# MLT CST

DIN CODE: J/A-DQ(BN)H(SR)H 8× 2.3 max. 96F

ID: GIF2



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Black FR-LSZH inner jacket, UV stable

Waterblocking E-glass yarn

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 3.8 mm)

Gel filled loose tube with optical fibers

Rip-Cord

Corrugated steel tape

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	16.5 ± 0.5	mm	EN 60811-1-1	
Cable weight	305	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	4,800	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 2,600 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 25 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	20	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	25	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has full rodent protection, direct burial possible.

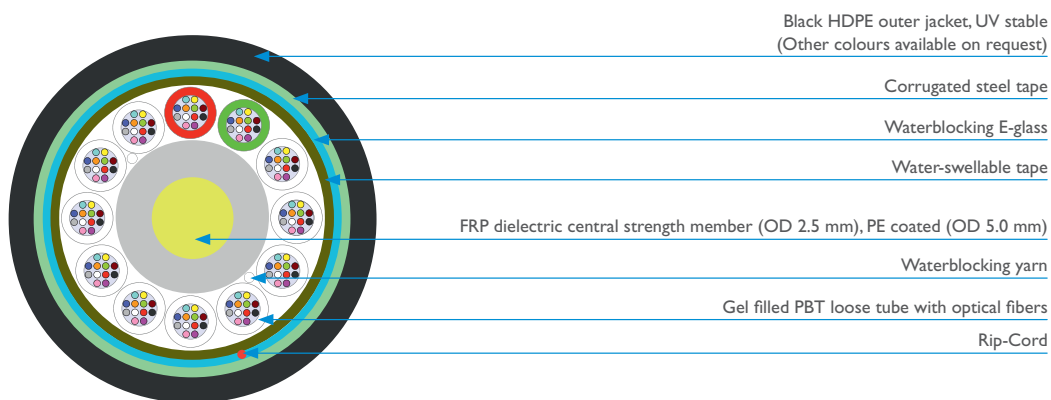
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4.2

# MLT CST

DIN CODE:A-DQ(BN)(SR)2Y 12× 1.7 max. 144F

ID: RH01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Corrugated steel tape

Waterblocking E-glass

Water-swellable tape

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 5.0 mm)

Waterblocking yarn

Gel filled PBT loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	14.1 ± 0.4	mm	EN 60811-1-1	
Cable weight	187	kg/km		- calculated
Outer jacket thickness	1.3	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	10	kN	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 6,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 2 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor. The cable has full rodent protection, direct burial possible.

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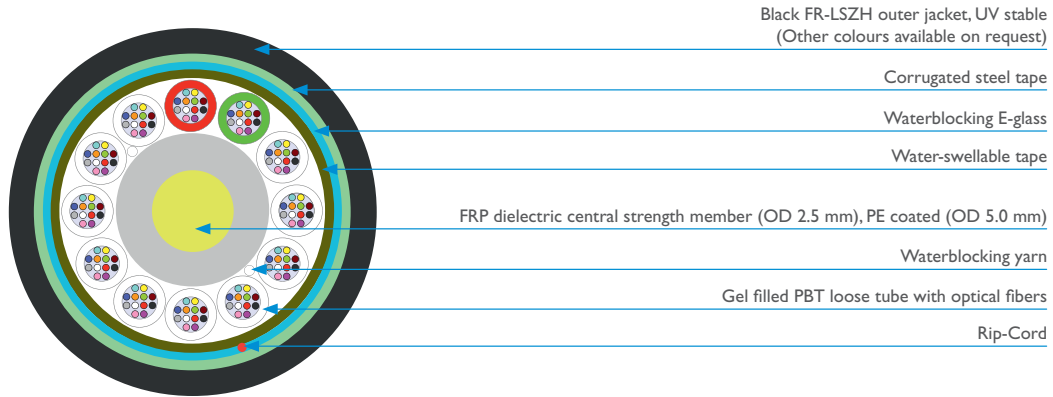
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# MLT CST

DIN CODE: J/A-DQ(BN)(SR)H 12× 1.7 max. 144F

ID: RH02



## Mechanical and Environmental properties

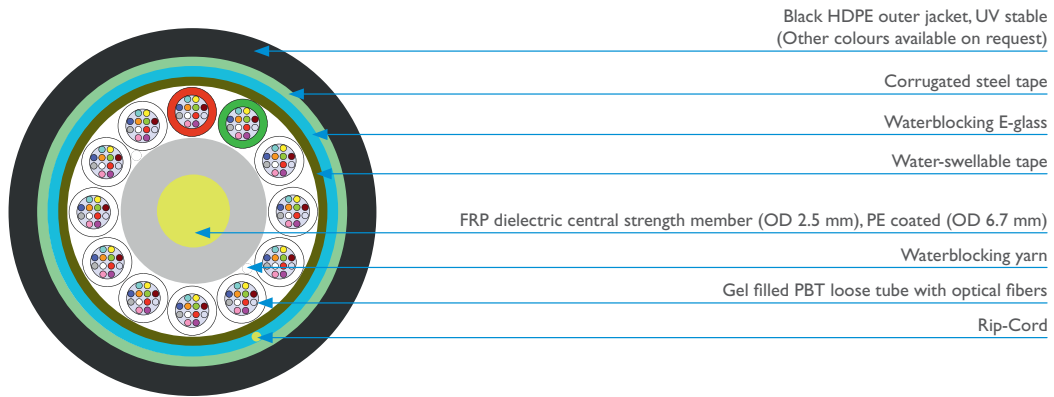
Test	Value	Unit	Method	Comment
Cable outer diameter	14.1 ± 0.4	mm	EN 60811-1-1	
Cable weight	218	kg/km		- calculated
Outer jacket thickness	1.3	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	6,600	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 3,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 2 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor. The cable has full rodent protection, direct burial possible.

# MLT CST

DIN CODE:A-DQ(BN)(SR)2Y 12× 2.3 max. 144F

ID: HH01



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	4,500 N
Crush resistance	*E3	10,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11a	20× cable diameter (no load)
	*E11b	25× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow		30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)		264 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Solid wooden drum
Loose tube diameter		2.3 mm
Outer jacket nominal thickness		1.5 ± 0.2 mm
Cable nominal outer diameter (calc.)		17.5 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has full rodent protection, direct burial possible.

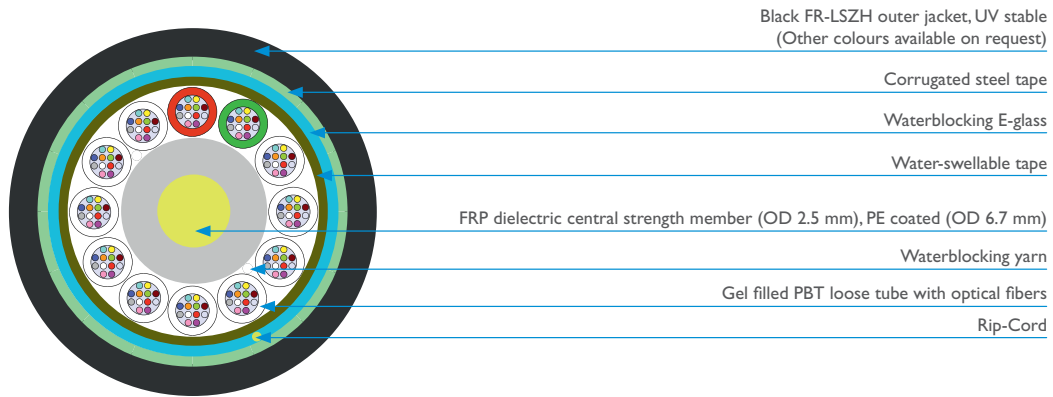
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4.2

# MLT CST

DIN CODE: J/A-DQ(BN)(SR)H 12× 2.3 max. 144F

ID: HH02



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	4,500 N
Crush resistance	*E3	10,000 N/10 cm
Impact resistance	*E4	3 impacts (w/30 Nm)
Min. bend radius	*E11a	20× cable diameter (no load)
	*E11b	25× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow		30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		301 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Solid wooden drum
Loose tube diameter		2.3 mm
Outer jacket nominal thickness		1.5 ± 0.2 mm
Cable nominal outer diameter (calc.)		17.5 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has full rodent protection, direct burial possible.

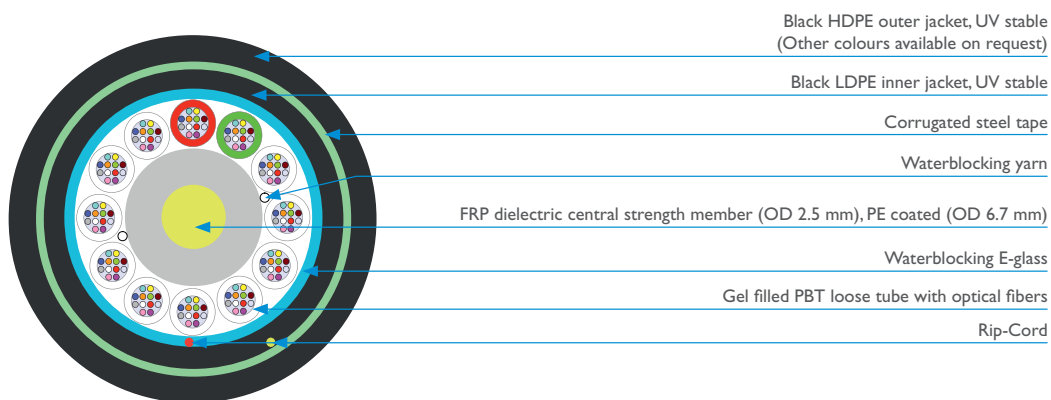
4

4.2

# MLT CST

DIN CODE: A-DQ(BN)2Y(SR)2Y 12× 2.3 max. 144F

ID: HIPI



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Black LDPE inner jacket, UV stable

Corrugated steel tape

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 6.7 mm)

Waterblocking E-glass

Gel filled PBT loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		19.5 ± 0.5	mm	EN 60811-1-1	
Cable weight		327	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		10	kN	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 7,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 25 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		20	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		25	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has full rodent protection, direct burial possible.

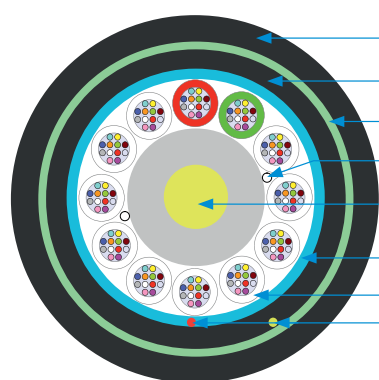
4

4.2

# MLT CST

DIN CODE: J/A-DQ(BN)H(SR)H 12× 2.3 max. 144F

ID: HIF2



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Black FR-LSZH inner jacket, UV stable

Corrugated steel tape

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 6.7 mm)

Waterblocking E-glass

Gel filled PBT loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	19.5 ± 0.5	mm	EN 60811-1-1	
Cable weight	404	kg/km		- calculated
Outer jacket thickness	1.5	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	10	kN	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 7,500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 25 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	20	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	25	× OD	EN 60794-1-2-E1 I b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has full rodent protection, direct burial possible.

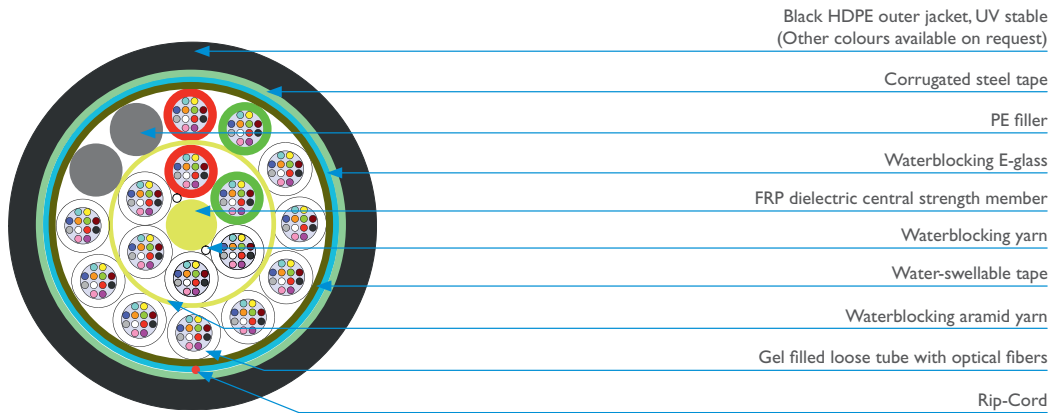
4

4.2

# MLT CST

DIN CODE:A-DQ(BN)(SR)2Y 18× 1.7 max. 216F

ID:VH01



The picture represents a cable with 192 optical fibers.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		14.5 ± 0.4	mm	EN 60811-1-1	
Cable weight		195	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		3,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1. - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor. The cable has full rodent protection, direct burial possible.

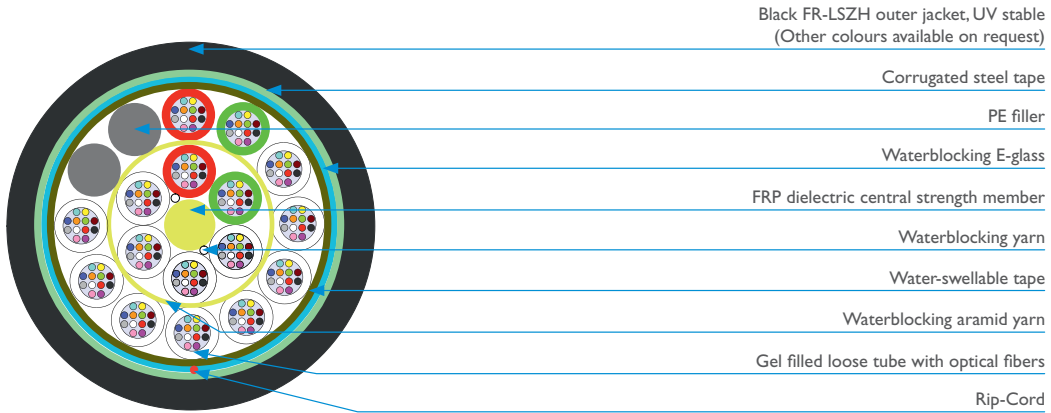
4

4.2

# MLT CST

DIN CODE: J/A-DQ(BN)(SR)H 18× 1.7 max. 216F

ID:VH02



The picture represents a cable with 192 optical fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	14.5 ± 0.4	mm	EN 60811-1-1	
Cable weight	232	kg/km		- calculated
Outer jacket thickness	1.5 ± 0.2	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	3,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 500 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	10	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0,05 dB at 1550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor. The cable has full rodent protection, direct burial possible.

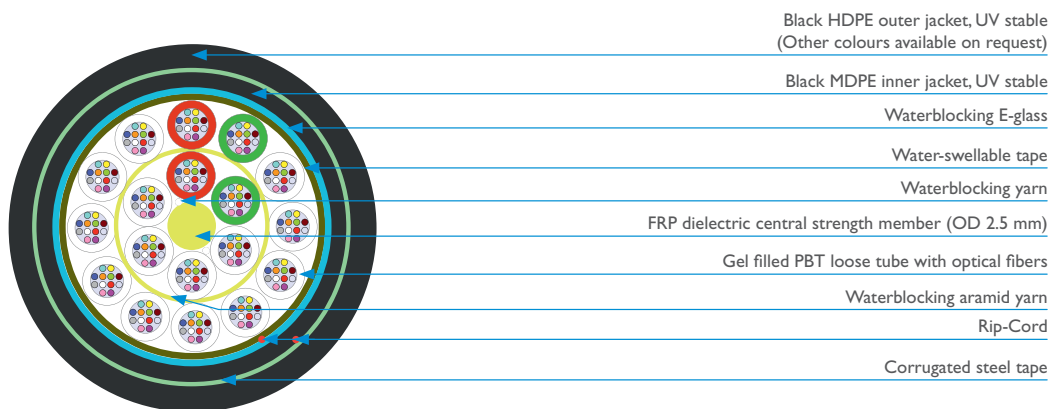
4

4.2

# MLT CST

DIN CODE: A-DQ(BN)2Y(SR)2Y 18× 2.3 max. 216F

ID: IIP1



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		19.5 ± 0.4	mm	EN 60811-1-1	
Cable weight		323	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		3,300	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 1,100 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		5	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		20	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)		25	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor. The cable has full rodent protection, direct burial possible.

4

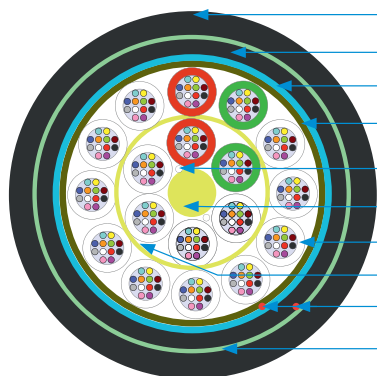
4.2



# MLT CST

DIN CODE: J/A-DQ(BN)H(SR)H 18× 2.3 max. 216F

ID: IIF2



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Black FR-LSZH inner jacket, UV stable

Waterblocking E-glass

Water-swellable tape

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm)

Gel filled PBT loose tube with optical fibers

Waterblocking aramid yarn

Rip-Cord

Corrugated steel tape

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		19.5 ± 0.4	mm	EN 60811-1-1	
Cable weight		400	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		3,300	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 1,100 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		5	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		20	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.5 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		25	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -45 to +70 °C -45 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor. The cable has full rodent protection, direct burial possible.

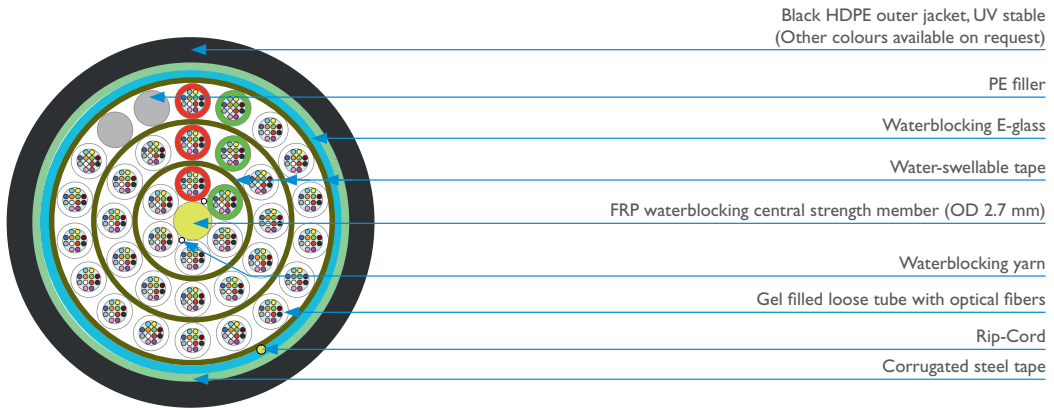
4

4.2

# MLT CST

DIN CODE:A-DQ(BN)(SR)2Y 36× 2.5 max. 432F

ID: MH01



The picture represents a cable with 408 fibers.

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	2,500 N
Crush resistance	*E3	8,000 N/10 cm
Impact resistance	*E4	3 impacts (w/30 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		471 kg/km
Standard put-up length		2,100 m (± 5 %)
Packaging		Solid wooden drum
Loose tube diameter		2.5 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		24.5 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has full rodent, direct burial possible.

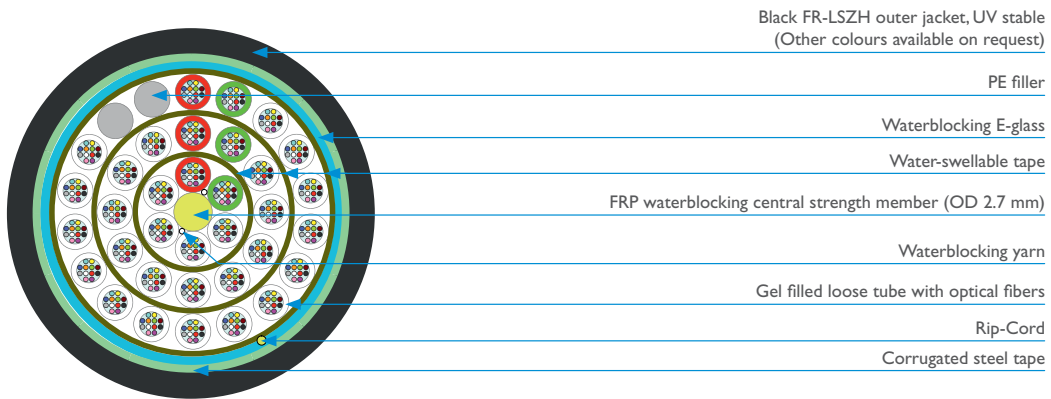
4

4.2

# MLT CST

DIN CODE: J/A-DQ(BN)(SR)H 36× 2.5 max. 432F

ID: MH02



The picture represents a cable with 408 fibers.

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	2,500 N
Crush resistance	*E3	8,000 N/10 cm
Impact resistance	*E4	3 impacts (w/30 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		530 kg/km
Standard put-up length		2,100 m
Packaging		Solid wooden drum
Loose tube diameter		2.5 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		24.5 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has full rodent, direct burial possible.

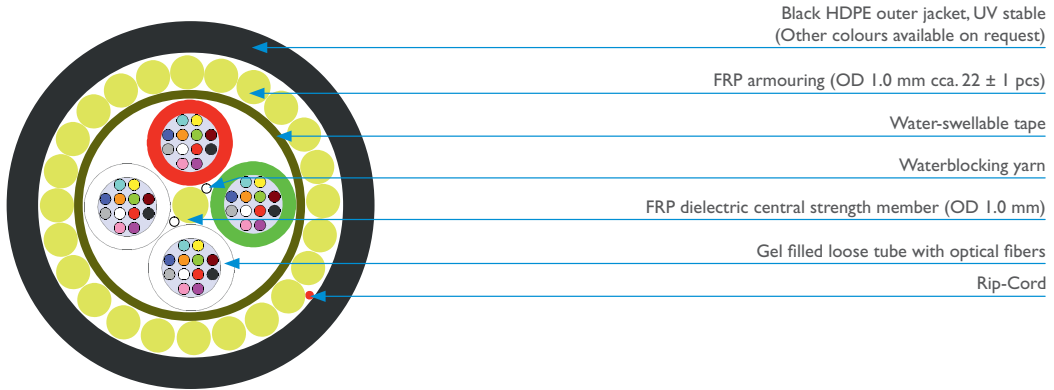
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4.2

# MLT FRP

DIN CODE:A-DQ(BN)B2Y (FRP I.0) 4× 2.3 max. 48F

ID: LF01



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	3,800 N
Crush resistance		*E3	4,000 N/10 cm
Impact resistance		*E4	3 impacts (w/25 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation	*F1	-15 °C to +50 °C
	Operation		-40 °C to +70 °C
	Storage		-40 °C to +70 °C
Cable informative nominal weight (calc.)			103 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			2.3 mm
Outer jacket thickness			1.3 ± 0.2 mm
Cable outer diameter			10.7 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

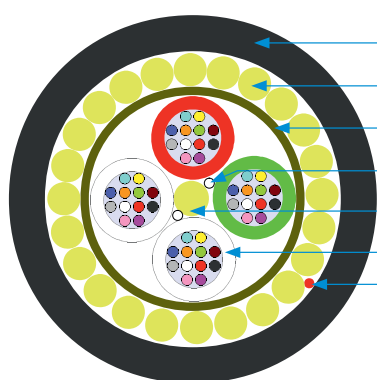
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4.2

# MLT FRP

DIN CODE:A-DQ(BN)BH (FRP I.0) 4× 2.3 max. 48F

ID: LF02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

FRP armouring (OD 1.0 mm cca. 22 ± 1 pcs)

Water-swellaable tape

Waterblocking yarn

FRP dielectric central strength member (OD 1.0 mm)

Gel filled loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	3,800 N
Crush resistance	*E3	4,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		134 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.3 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		11.1 ± 0.4 mm (measured acc. to EN 60811-1-1)

Installation  
Operation  
Storage

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

4

4.2

# MLT FRP

DIN CODE: A-DQ(BN)2YB2Y (FRP I.0) 4× 2.3 max. 48F

ID: LFPI



Black HDPE outer jacket, UV stable  
(Other colours available on request)

FRP armouring (OD 1.0 mm)

Black MDPE inner jacket, UV stable

Water-swellable tape

FRP dielectric central strength member (OD 1.0 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		12.8 ± 0.4	mm	EN 60811-1-1	
Cable weight		134	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		1.2	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		7,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 950 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

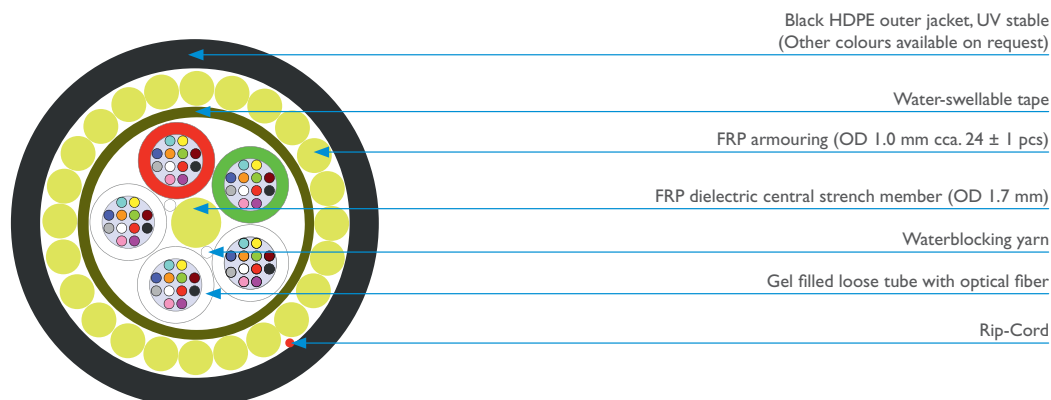
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4.2

# MLT FRP

DIN CODE:A-DQ(BN)B2Y (FRP I.0) 5× 2.3 max. 60F

ID: JF01



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	5,000 N
Crush resistance	*E3	4,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		118 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.3 mm
Outer jacket thickness		1.3 ± 0.2 mm
Cable outer diameter		11.4 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

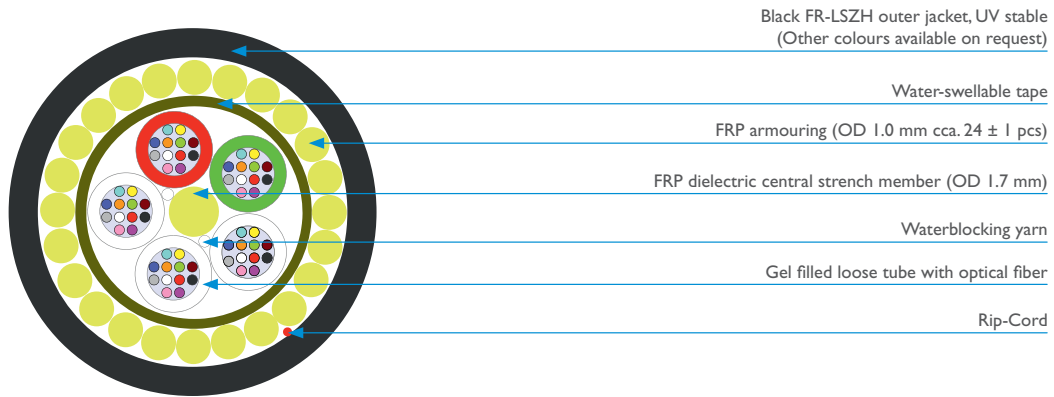
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4.2

# MLT FRP

DIN CODE: J/A-DQ(BN)BH (FRP I.0) 5× 2.3 max. 60F

ID: JF02



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	5,000 N
Crush resistance	*E3	4,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)		152 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.3 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		12.0 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

4

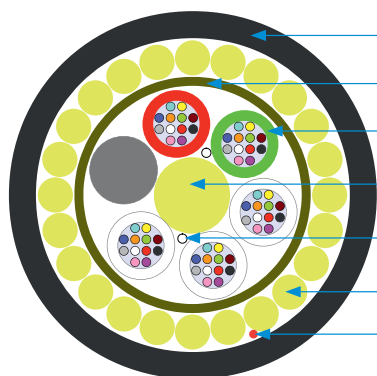
4.2



# MLT FRP

DIN CODE:A-DQ(BN)B2Y (FRP I.0) 6× 2.3 max. 72F

ID: FF01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Water-swellable tape

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 2.5 mm)

Waterblocking yarn

FRP armouring (OD 1.0 mm cca. 27 ± 1 pcs)

Rip-Cord

The picture represents a cable with 60 fibers.

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	7,000 N
Crush resistance	*E3	4,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		138 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.3 mm
Outer jacket nominal thickness		1.3 ± 0.2 mm
Cable outer diameter (calc.)		12.2 ± 0.4 mm (measured acc. to EN 60811-1-1)

Installation  
Operation  
Storage

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

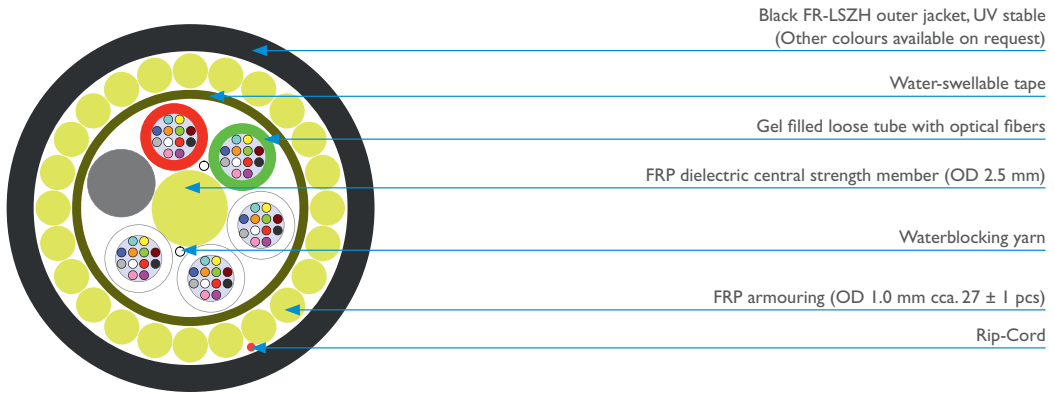
4

4.2

# MLT FRP

DIN CODE: J/A-DQ(BN)BH (FRP I.0) 6× 2.3 max. 72F

ID: FF02



The picture represents a cable with 60 fibers.

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	7,000 N
Crush resistance	*E3	4,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		174 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.3 mm
Outer jacket nominal thickness		1.5 ± 0.2 mm
Cable outer diameter (calc.)		12.6 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

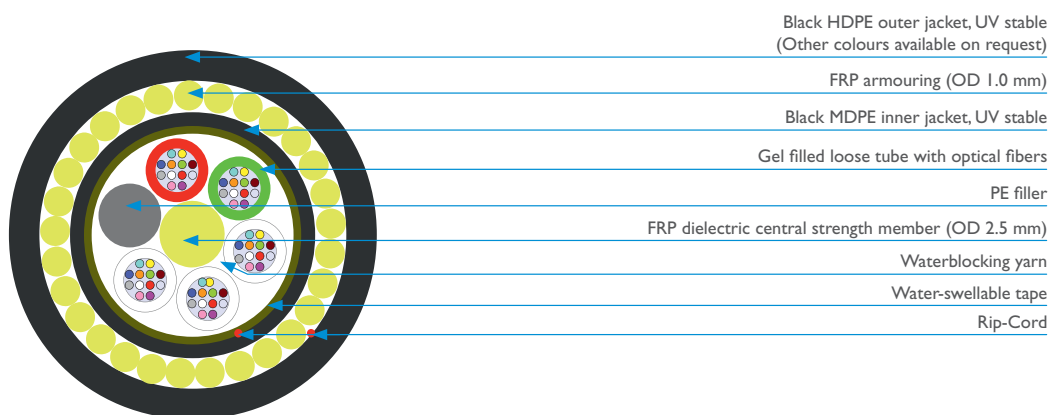
4

4.2

# MLT FRP

DIN CODE:A-DQ(BN)2YB2Y (FRP 1.0) 6× 2.3 max. 72F

ID: FFPI



The picture represents a cable with 60 fibers.

## Mechanical and Environmental properties

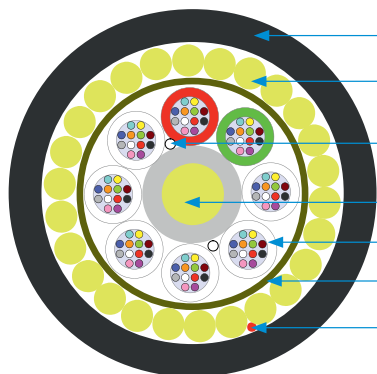
Test	Value	Unit	Method	Comment
Cable outer diameter	14.3 ± 0.4	mm	EN 60811-1-1	
Cable weight	170	kg/km		- calculated
Inner jacket thickness	1.0	mm		
Outer jacket thickness	1.2	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	10	kN	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 3,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	4,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use or direct burial. The cable has higher level of rodent protection.

# MLT FRP

DIN CODE:A-DQ(BN)B2Y (FRP I.0) 8× 2.3 max. 96F

ID: GF01



Black HDPE outer jacket, UV stable  
(Other colours available on request)

FRP armoured (OD 1.3 mm cca. 24 ± 1 pcs)

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 3.8 mm)

Gel filled loose tube with optical fibers

Water-swellable tape

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	9,000 N
Crush resistance	*E3	4,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)		186 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.3 mm
Outer jacket nominal thickness		1.3 ± 0.2 mm
Cable outer diameter (calc.)		14.1 ± 0.4 mm (measured acc. to EN 60811-1-1)

Installation  
Operation  
Storage

4

4.2

\* IEC 60794-1-2

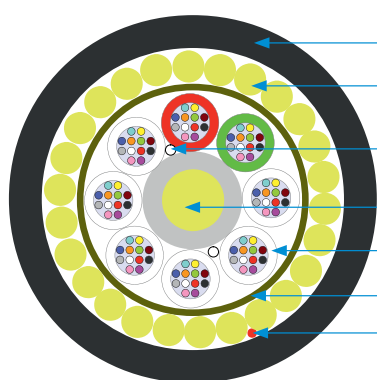
Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

# MLT FRP

DIN CODE:A-DQ(BN)BH (FRP 1.3) 8× 2.3 max. 96F

ID: GF02



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

FRP armoured (OD 1.3 mm cca. 24 ± 1 pcs)

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 3.8 mm)

Gel filled loose tube with optical fibers

Water-swellable tape

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	9,000 N
Crush resistance	*E3	4,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		228 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.3 mm
Outer jacket nominal thickness		1.5 ± 0.2 mm
Cable outer diameter (calc.)		14.5 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

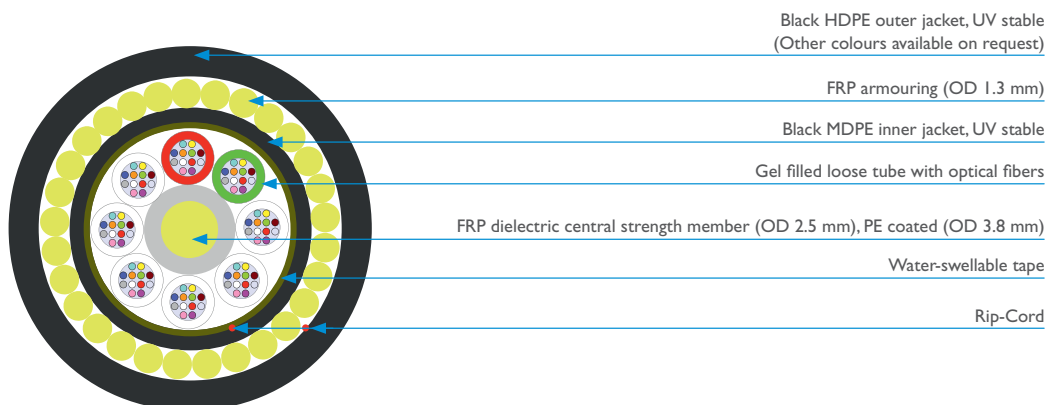
4

4.2

# MLT FRP

DIN CODE: A-DQ(BN)2YB2Y (FRP I.3) 8× 2.3 max. 96F

ID: GFPI



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		16.2 ± 0.4	mm	EN 60811-1-1	
Cable weight		225	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		1.2	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		13.5	kN	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 5,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use or direct burial. The cable has higher level of rodent protection.

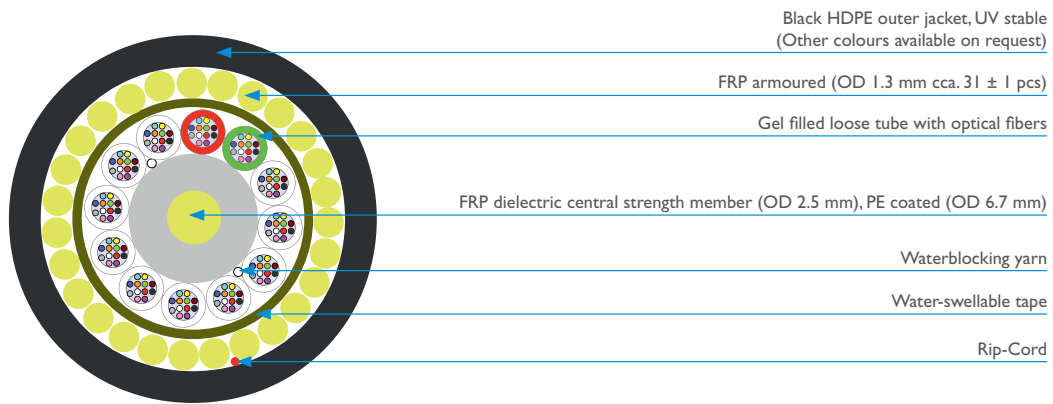
4

4.2

# MLT FRP

DIN CODE:A-DQ(BN)B2Y (FRP I.0) 12× 2.3 max. 144F

ID: HF01



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	12,000 N
Crush resistance	*E3	4,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		268 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.3 mm
Outer jacket thickness		1.3 ± 0.2 mm
Cable outer diameter		17.0 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

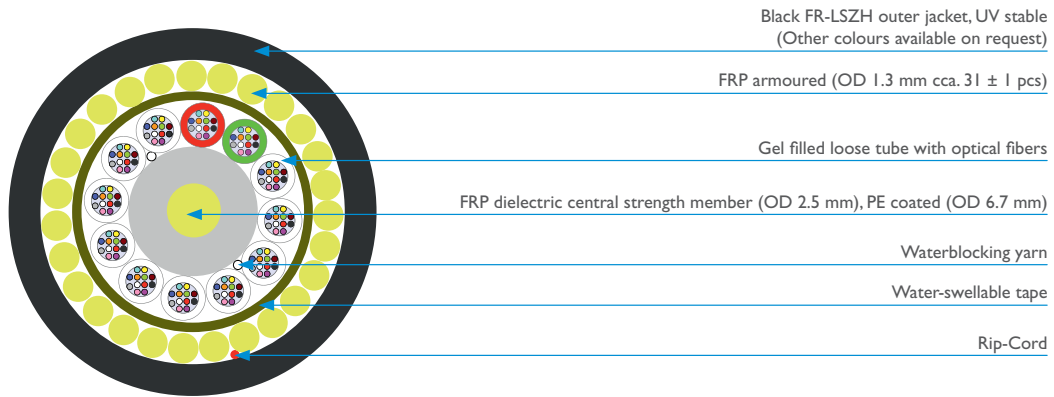
4

4.2

# MLT FRP

DIN CODE: J/A-DQ(BN)BH (FRP I.3) 12× 2.3 max. 144F

ID: HF02



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	12,000 N
Crush resistance	*E3	4,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	Installation
		Operation
		Storage
Cable informative nominal weight (calc.)		315 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.3 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		17.4 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

4

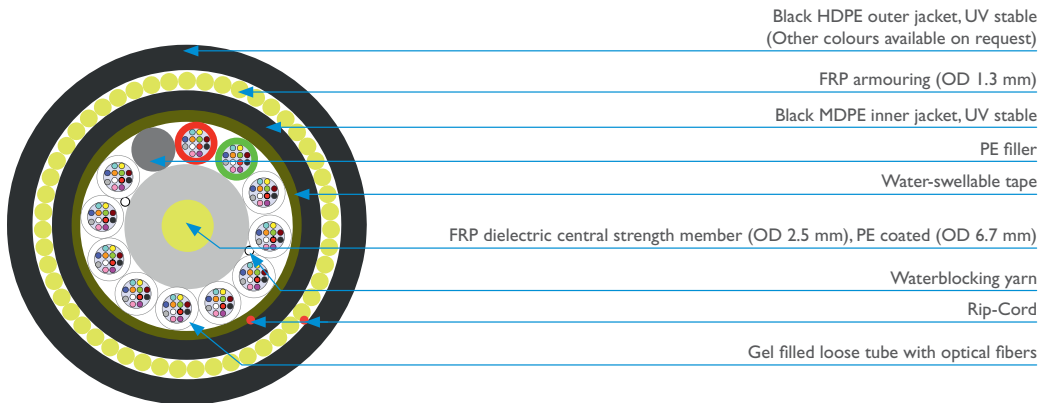
4.2



# MLT FRP

DIN CODE:A-DQ(BN)2YB2Y (FRP I.3) 12× 2.3 max. I44F

ID: HFPI



The picture represents a cable with 132 fibers.

## Mechanical and Environmental properties

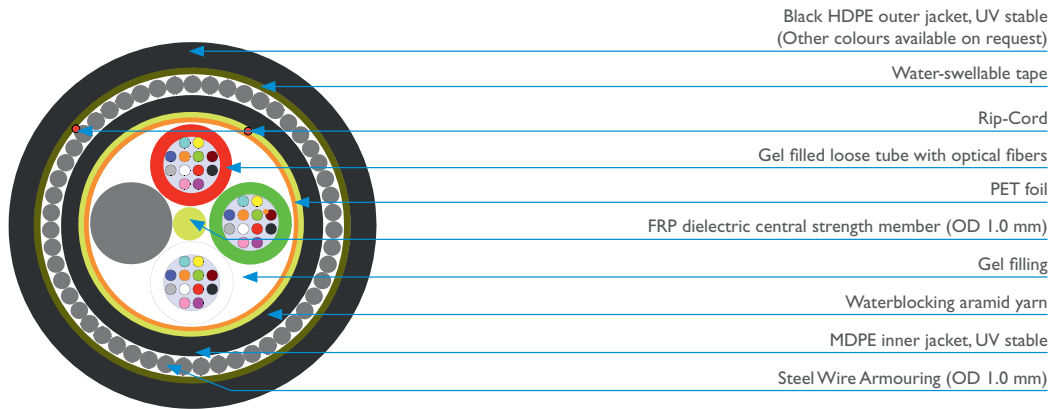
Test	Value	Unit	Method	Comment
Cable outer diameter	19.1 ± 0.4	mm	EN 60811-1-1	
Cable weight	308	kg/km		- calculated
Inner jacket thickness	1.0	mm		
Outer jacket thickness	1.2	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	20	kN	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 10 kN - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	4,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable is full dielectric, rodent protection and direct burial possible.

# MLT SWA

DIN CODE:A-DF(ZN)2YB2Y (R1.0vzk) 4× 2.3 max. 48F

ID: LXPK



The picture represents a cable with 36 fibers.

## Mechanical and Environmental properties

Test	Method	Value/Unit
Tensile strength (short term)	*E1a	6,000 N
Tensile strength (long term)		2,400 N
Crush resistance	*E3	5,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		293 kg/km
Standard put-up length		2,100 m; 4,100 m (± 5 %)
Packaging		Solid wooden drum
Loose tube nominal diameter		2.3 mm
Inner jacket thickness		1.0 ± 0.2 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		13.6 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, direct burial possible.

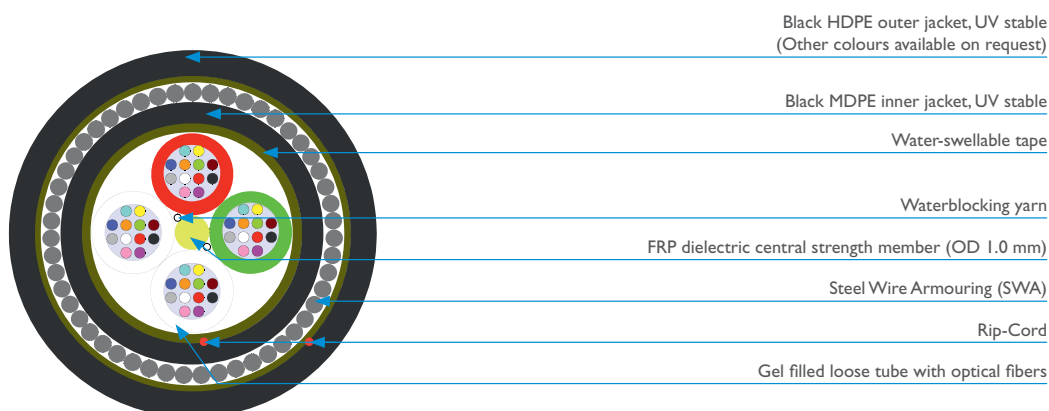
4

4.2

# MLT SWA

DIN CODE:A-DQ2YB2Y (R1.0 vzk) 4× 2.3 max. 48F

ID: LWPI



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		13.2 ± 0.4	mm	EN 60811-1-1	
Cable weight		277	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		1.4	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		1,900	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 250 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor, direct burial possible.

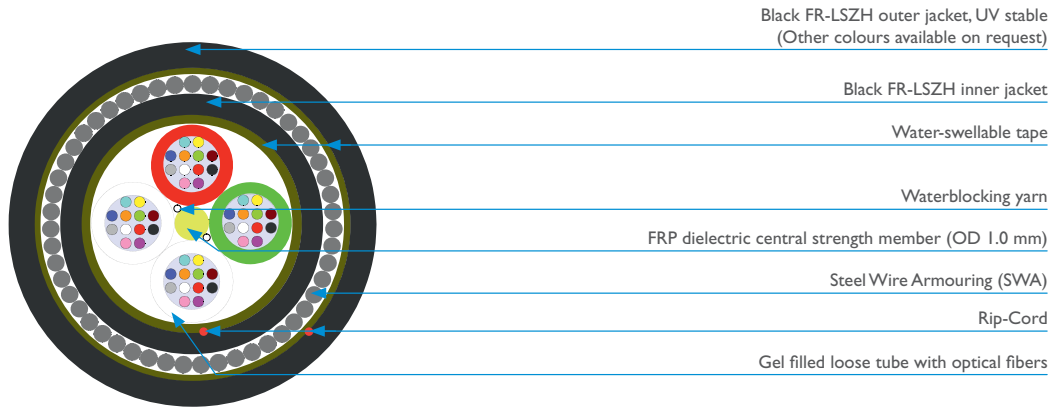
4

4.2

# MLT SWA

DIN CODE: J/A-DQHBH (R1.0 vzk) 4× 2.3 max. 48F

ID: LWF2



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		13.2 ± 0.4	mm	EN 60811-1-1	
Cable weight		322	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		1.4	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		1,900	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 250 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor, direct burial possible.

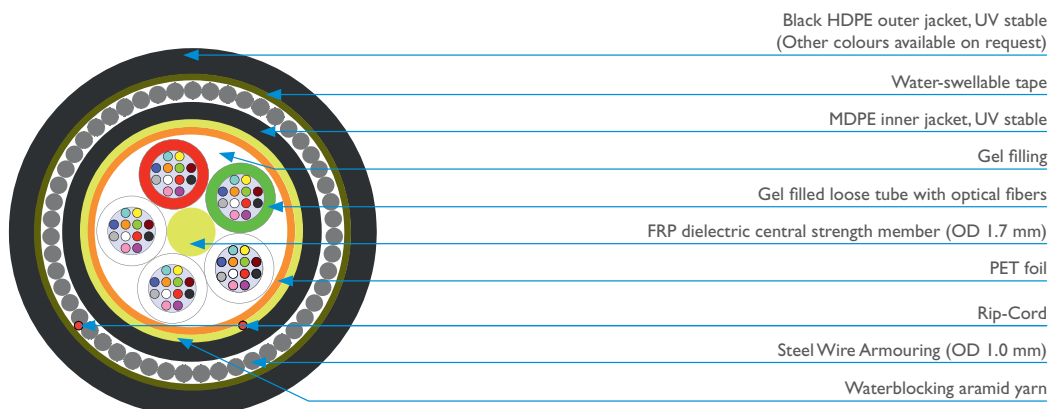
4

4.2

# MLT SWA

DIN CODE:A-DF(ZN)2YB2Y (R1.0 vzk) 5× 2.3 max. 60F

ID:JXPK



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Water-swellable tape

MDPE inner jacket, UV stable

Gel filling

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 1.7 mm)

PET foil

Rip-Cord

Steel Wire Armouring (OD 1.0 mm)

Waterblocking aramid yarn

## Mechanical and Environmental properties

Test	Method	Value/Unit	
Tensile strength (short term)	*E1a	6,000 N	
Tensile strength (long term)		2,400 N	
Crush resistance	*E3	5,000 N/10 cm	
Impact resistance	*E4	3 impacts (w/25 Nm)	
Min. bend radius	*E11a	15× cable diameter (no load)	
	*E11b	20× cable diameter (load)	
Moisture resistance	*F5	passed	
Compound flow	*E14	30 cm/24 hrs/70 °C passed	
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C
			-40 °C to +70 °C
			-40 °C to +70 °C
Cable informative nominal weight (calc.)		318 kg/km	
Standard put-up length		2,100 m; 4,100 m	
Packaging		Solid wooden drum	
Loose tube nominal diameter		2.3 mm	
Inner jacket thickness		1.0 ± 0.2 mm	
Outer jacket thickness		1.5 ± 0.2 mm	
Cable outer diameter		14.2 ± 0.4 mm (measured acc. to EN 60811-1-1)	

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, direct burial possible.

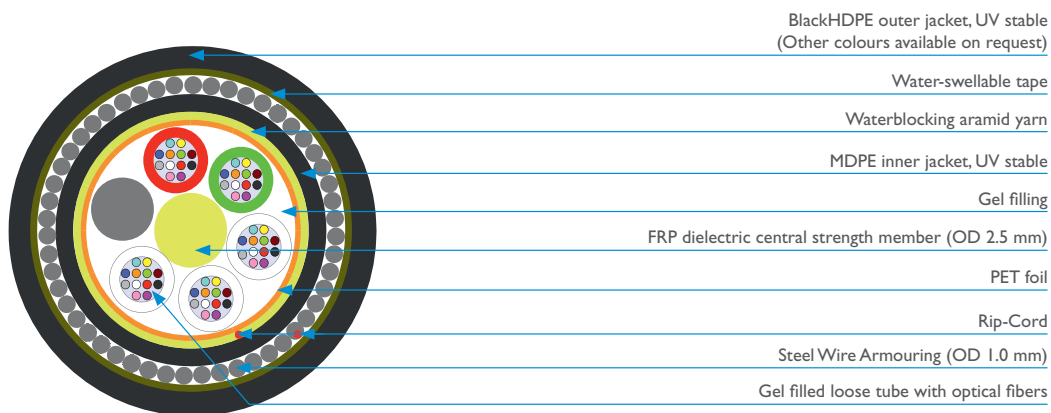
4

4.2

# MLT SWA

DIN CODE:A-DF(ZN)2YB2Y (R1.0 vzk) 6× 2.3 max. 72F

ID: FXPK



The picture represents a cable with 60 fibers.

## Mechanical and Environmental properties

Test	Method	Value/Unit
Tensile strength (short term)	*E1a	6,500 N
Tensile strength (long term)		2,600 N
Crush resistance	*E3	5,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		350 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Solid wooden drum
Loose tube nominal diameter		2,3 mm
Inner jacket thickness		1.0 ± 0.2 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable nominal outer diameter		15.0 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, direct burial possible.

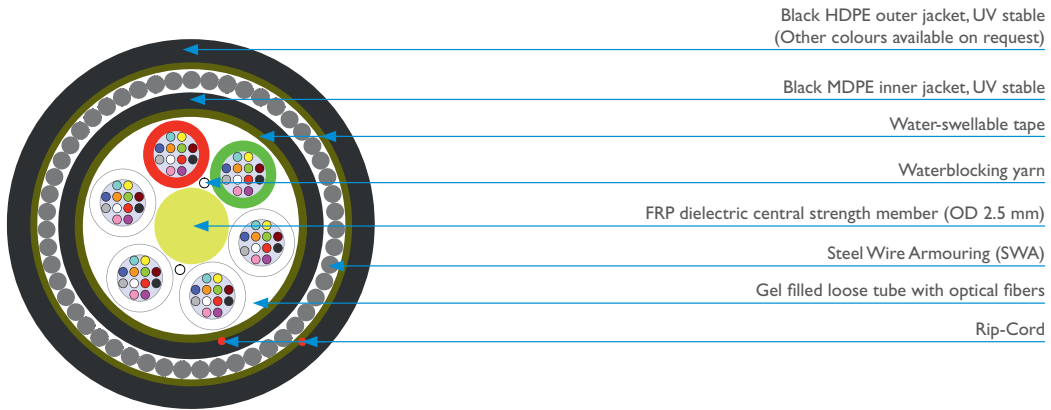
4

4.2

# MLT SWA

DIN CODE:A-DQ2YB2Y (R1.0 vzk) 6× 2.3 max. 72F

ID: FWPI



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	14.7 ± 0.4	mm	EN 60811-1-1	
Cable weight	333	kg/km		- calculated
Inner jacket thickness	1.0	mm		
Outer jacket thickness	1.4	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	4,200	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 1,100 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	4,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor, direct burial possible.

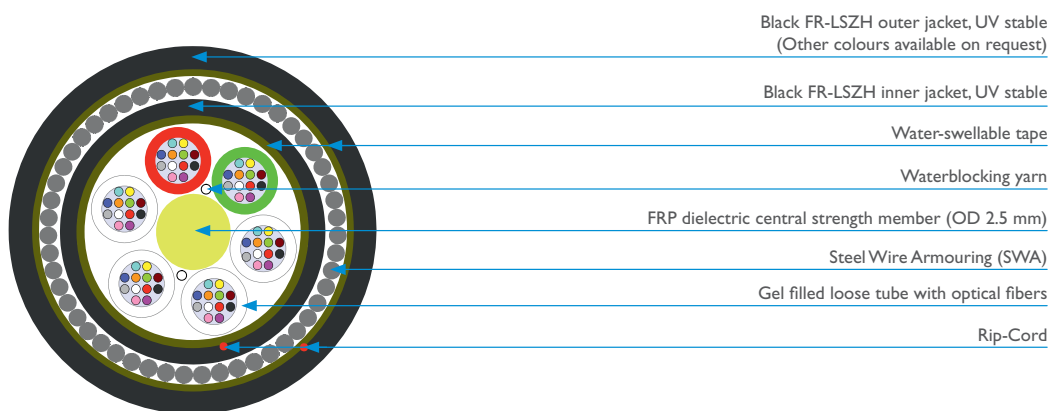
4

4.2

# MLT SWA

DIN CODE: J/A-DQHBH (R1.0 vzk) 6× 2.3 max. 72F

ID: FWF2



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Black FR-LSZH inner jacket, UV stable

Water-swellable tape

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm)

Steel Wire Armouring (SWA)

Gel filled loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	14.7 ± 0.4	mm	EN 60811-1-1	
Cable weight	385	kg/km		- calculated
Inner jacket thickness	1.0	mm		
Outer jacket thickness	1.4	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	4,200	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 1,100 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	4,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor, direct burial possible.

4

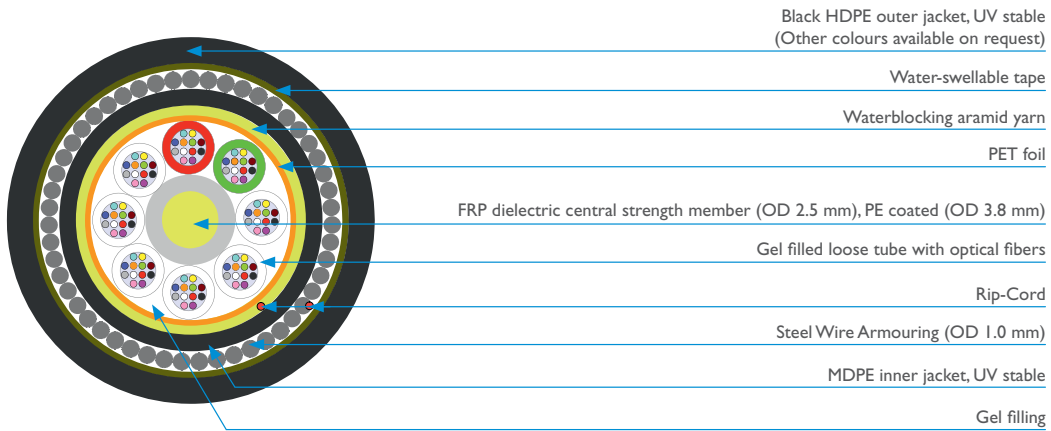
4.2



# MLT SWA

DIN CODE:A-DF(ZN)2YB2Y (R1.0vzk) 8× 2.3 max. 96F

ID: GXPK



## Mechanical and Environmental properties

Test	Method	Value/Unit
Tensile strength (short term)	*E1a	7,100 N
Tensile strength (long term)		2,800 N
Crush resistance	*E3	5,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1 -5 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		410 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Solid wooden drum
Loose tube nominal diameter		2.3 mm
Inner jacket thickness		1.0 ± 0.2 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		16.3 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, direct burial possible.

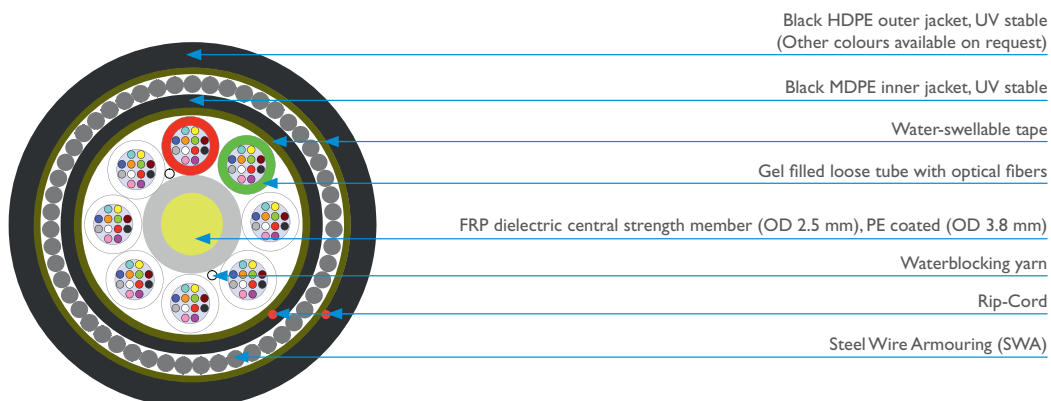
4

4.2

# MLT SWA

DIN CODE: A-DQ2YB2Y (R 1.0 vzk) 8× 2.3 max. 96F

ID: GWPI



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	16.0 ± 0.4	mm	EN 60811-1-1	
Cable weight	492	kg/km		- calculated
Inner jacket thickness	1.0	mm		
Outer jacket thickness	1.4	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	5,500	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 2,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	4,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor, direct burial possible.

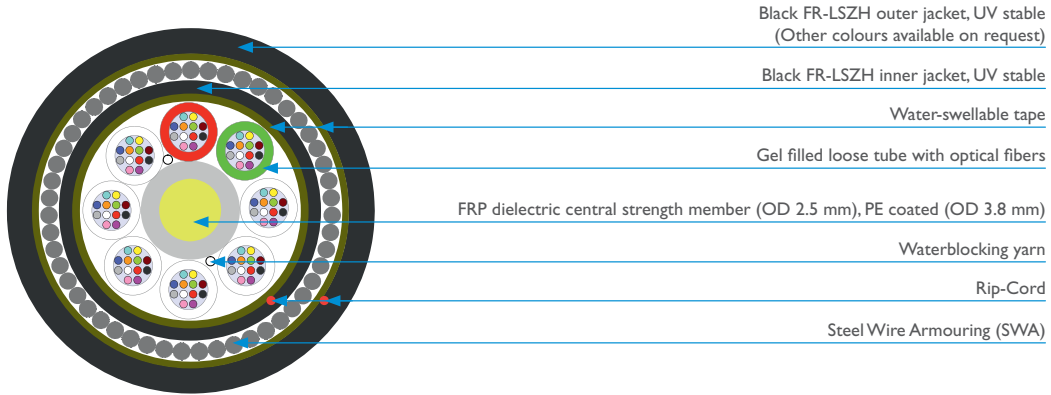
4

4.2

# MLT SWA

DIN CODE: J/A-DQHBH (RI.0 vzk) 8× 2.3 max. 96F

ID: GWF2



## Mechanical and Environmental properties

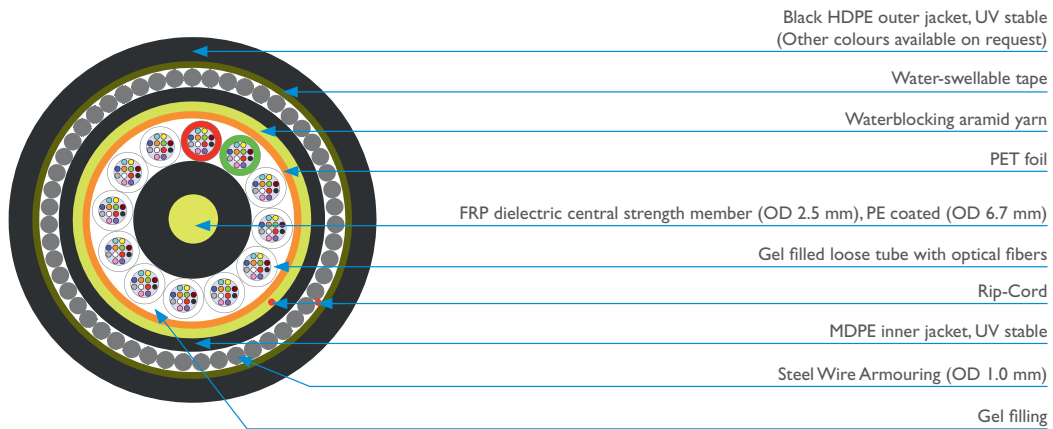
Test	Value	Unit	Method	Comment
Cable outer diameter	16.0 ± 0.4	mm	EN 60811-1-1	
Cable weight	450	kg/km		- calculated
Inner jacket thickness	1.0	mm		
Outer jacket thickness	1.4	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	5,500	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 2,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	4,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor, direct burial possible.

# MLT SWA

DIN CODE:A-DF(ZN)2YB2Y (R1,0 vzk) 12× 2.3 max. 144F

ID: HXPk



## Mechanical and Environmental properties

Test	Method	Value/Unit
Tensile strength (short term)	*E1a	11,000 N
Tensile strength (long term)		4,400 N
Crush resistance	*E3	5,000 N/10 cm
Impact resistance	*E4	3 impacts (w/25 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)		539 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Solid wooden drum
Loose tube diameter		2.3 mm
Inner jacket thickness		1.0 ± 0.2 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		19.2 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, direct burial possible.

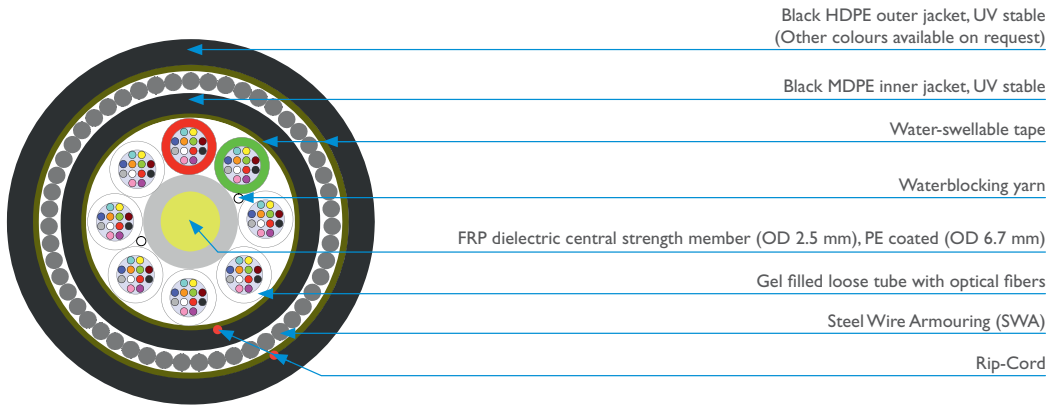
4

4.2

# MLT SWA

DIN CODE: A-DQ2YB2Y (R1.0 vzk) 12× 2.3 max. 144F

ID: HWPI



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Black MDPE inner jacket, UV stable

Water-swellable tape

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 6.7 mm)

Gel filled loose tube with optical fibers

Steel Wire Armouring (SWA)

Rip-Cord

## Mechanical and Environmental properties

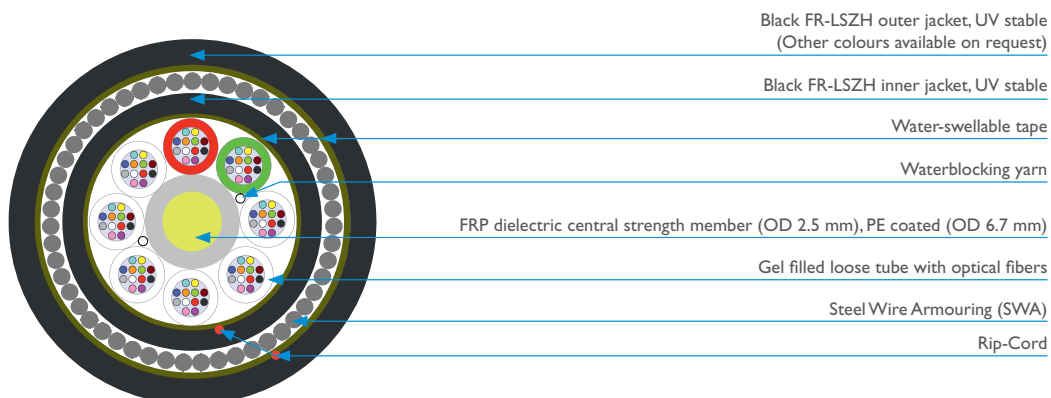
Test		Value	Unit	Method	Comment
Cable outer diameter		18.9 ± 0.4	mm	EN 60811-1-1	
Cable weight		516	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		1.4	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		9,700	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 5,900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use, direct burial possible.

# MLT SWA

DIN CODE: J/A-DQHBH (R1.0 vzk) 12× 2.3 max. 144F

ID: HWF2



- Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)
- Black FR-LSZH inner jacket, UV stable
- Water-swellable tape
- Waterblocking yarn
- FRP dielectric central strength member (OD 2.5 mm), PE coated (OD 6.7 mm)
- Gel filled loose tube with optical fibers
- Steel Wire Armouring (SWA)
- Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		18.9 ± 0.4	mm	EN 60811-1-1	
Cable weight		588	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		1.4	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		9,700	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 5,900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use, direct burial possible.

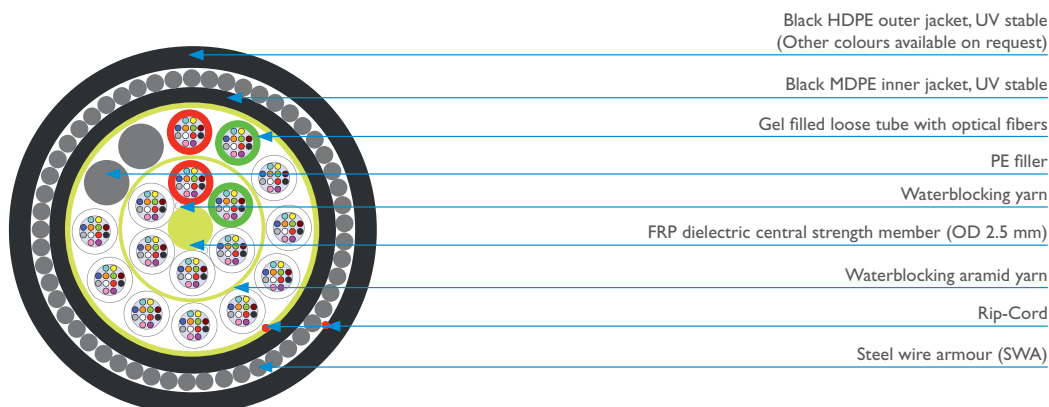
4

4.2

# MLT SWA

DIN CODE:A-DQ2YB2Y (R1.0 vzk) 18× 2.3 max. 216F

ID: IWPI



The picture represents a cable with 192 fibers.

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	8,000 N
Crush resistance	*E3	3,000 N/10 cm
Impact resistance	*E4	3 impacts (w/30 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		524 kg/km
Standard put-up length		2,100 m
Packaging		Solid wooden drum
Loose tube diameter		2.3 mm
Inner jacket nominal thickness		1.0 ± 0.2 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		19.2 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, direct burial possible.

4

4.2

# MLT SWA

DIN CODE: J/A-DQHBH (R1,0 vzk) 18× 2.3 max. 216F

ID: IWF2



The picture represents a cable with 192 fibers.

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	8,000 N
Crush resistance	*E3	3,000 N/10 cm
Impact resistance	*E4	3 impacts (w/30 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		592 kg/km
Standard put-up length		2,100 m
Packaging		Solid wooden drum
Loose tube diameter		2.3 mm
Inner jacket nominal thickness		1.0 ± 0.2 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		19.2 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use, direct burial possible.

4

4.2









## 5. DROP

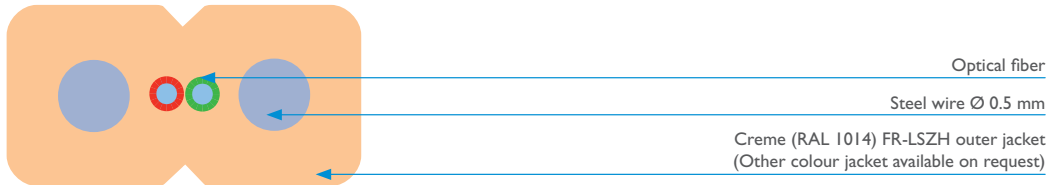
5.1 250  $\mu\text{m}$

5.2 900  $\mu\text{m}$

# DROP 250 μm FTTx

DIN CODE: FLAT DROP max. 2F

ID: Z041



The picture represents a cable with 2 fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	2.0 × 3.0 ± 0.2	mm	EN 60811-1-1	
Cable weight	10	kg/km		- calculated
Max. tensile strength	300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 60 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	4,000	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	25	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for FTTx aerial installation.

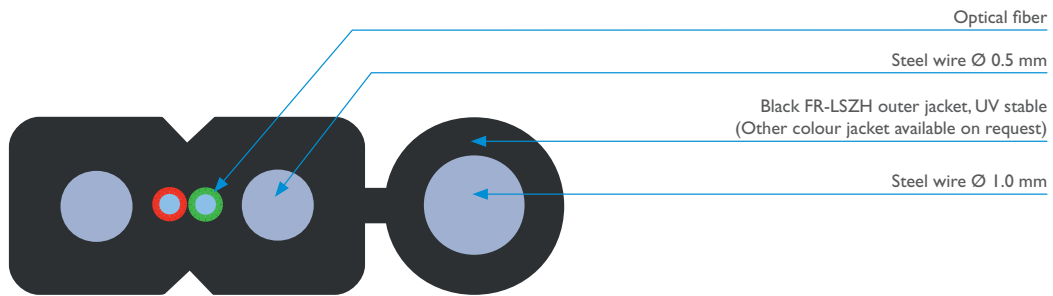
5

5.1

# DROP 250 $\mu\text{m}$ FTTx

DIN CODE: FLAT AERIAL DROP max. 2F

ID: Z042



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		$2.0 \times 5.2 \pm 0.2$	mm	EN 60811-1-1	
Cable weight		21	kg/km		- calculated
Outer jacket thickness		0.5	mm		
Neck diameter		$0.2 \times 0.2$	mm		
Max. tensile strength		800	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 60 N - max. attenuation variation $\leq 0.05$ dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		4,000	N	EN 60794-1-2-E3	- plate dimension $100 \times 100$ mm - max. attenuation variation $\leq 0.1$ dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation $\leq 0.05$ dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		25	$\times$ OD	EN 60794-1-2-E11 a	- max. attenuation variation $\leq 0.05$ dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	$\times$ OD	EN 60794-1-2-E11 b	- max. attenuation variation $\leq 0.05$ dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation $\leq 0.1$ dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for FTTx aerial installation.

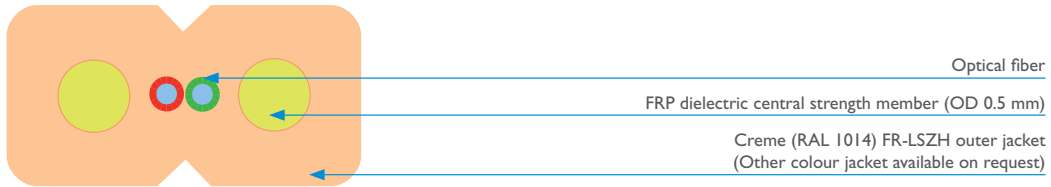
5

5.1

# DROP 250 μm FTTx

DIN CODE: FLAT DROP FRP max. 2F

ID: Z043



The picture represents a cable with 2 fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	2.0 × 3.0 ± 0.2	mm	EN 60811-1-1	
Cable weight	7.5	kg/km		- calculated
Max. tensile strength	100	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 60 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	4,000	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	25	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 I b	- no increase attenuation after the test
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for FTTx aerial installation.

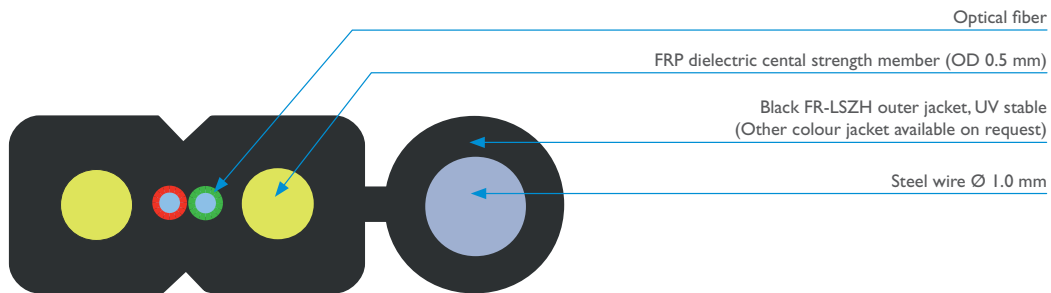
5

5.1

# DROP 250 $\mu\text{m}$ FTTx

DIN CODE: FLAT AERIAL DROP FRP max. 2F

ID: Z046



The picture represents a cable with 2 fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	$2.0 \times 5.2 \pm 0.2$	mm	EN 60811-1-1	
Cable weight	19	kg/km		- calculated
Outer jacket thickness	0.5	mm		
Neck diameter	$0.2 \times 0.2$	mm		
Max. tensile strength	800	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 60 N - max. attenuation variation $\leq 0.05$ dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	4,000	N	EN 60794-1-2-E3	- plate dimension $100 \times 100$ mm - max. attenuation variation $\leq 0.1$ dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation $\leq 0.05$ dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	25	$\times$ OD	EN 60794-1-2-E1 a	- max. attenuation variation $\leq 0.05$ dB at 1,550 nm
Min. bend radius (load)	20	$\times$ OD	EN 60794-1-2-E1 b	- no increase attenuation after the test
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation $\leq 0.1$ dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for FTTx aerial installation.

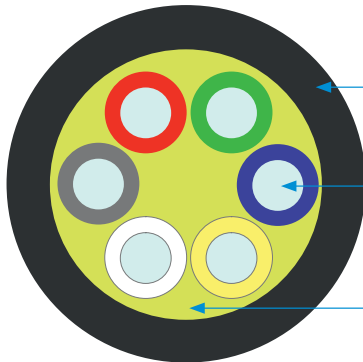
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5.1

# DROP 250 μm

DIN CODE: J/A-N(ZN)H MM max. 12F

ID: Z236



Black FR-LSZH outer jacket, UV stable  
(Other jacket colour available on request)

Optical fiber

Aramid yarn

The picture represents a cable with 6 fibers.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		3.4 ± 0.4	mm	EN 60811-1-1	
Cable weight		13	kg/km		- calculated
Outer jacket thickness		0.8	mm		
Max. tensile strength		700	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - 350 N fiber strain 0.3 % - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.2 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		10	mm	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		12	mm	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation Operation Storage	-5 to +50 °C -20 to +60 °C -20 to +60 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.2 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor aerial use.

5

5.1



Sag during installation 1.5 %

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
20	0.3	22	0.53	0.29	142	0.56	0.70	320	0.59	0.96	0.533
30	0.5	30	0.91	0.50	188	0.95	1.19	424			
40	0.6	44	1.29	0.71	237	1.37	1.72	523			
50	0.8	52	1.73	0.96	275						
60	0.9	66	2.16	1.19	318						
70	1.1	74	2.65	1.46	353						
80	1.2	88	3.13	1.73	392						
90	1.4	94	3.62	2.0	420						
100	1.5										
110	1.7										
120	1.8										
130	2.0										
140	2.1										
150	2.3										

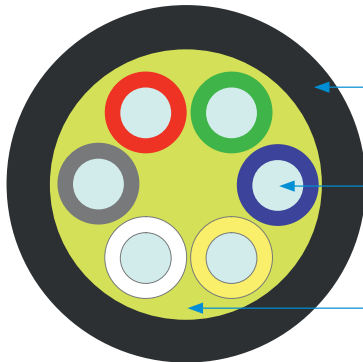
Sag during installation 3 %

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 3 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
20	0.6	11	0.67	0.37	113	0.62	0.78	286	0.64	1.04	495
30	0.9	17	1.09	0.60	157	1.04	1.30	390			
40	1.2	22	1.54	0.85	199	1.49	1.87	483			
50	1.5	28	2.01	1.11	238	1.99	2.48	569			
60	1.8	33	2.52	1.39	274						
70	2.1	39	3.05	1.68	309						
80	2.4	44	3.60	1.99	342						
90	2.7	50	4.17	2.30	374						
100	3.0	55	4.75	2.62	406						
110	3.3	61	5.35	2.95	437						
120	3.6										
130	3.9										
140	4.2										
150	4.5										

# DROP 250 μm

DIN CODE: J/A-N(ZN)H 1,000 N max. 12F

ID: Z237



Black FR-LSZH outer jacket, UV stable  
(Other jacket colour available on request)

Optical fiber

Waterblocking aramid yarn

The picture represents a cable with 6 fibers.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter	2F	3.2 ± 0.2	mm	EN 60811-1-1	
	4F	3.6 ± 0.2			
	8F	3.6 ± 0.2			
	12F	3.8 ± 0.2			
Cable weight	2F	10.5	kg/km		- calculated
	4F	12			
	8F	12			
	12F	13			
Inner jacket thickness		0.7	mm		
Max. tensile strength		1,000	N	EN 60794-1-2-E1	- max. fiber strain 0.7 % - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 15 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		12	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation	-5 to +50 °C -20 to +60 °C -20 to +60 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test
	Operation				
	Storage				

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor aerial use.

5

5.1

Sag during installation 1.5 %

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
20	0.3	28	0.48	0.22	196	0.46	0.57	405	0.48	0.79	668
30	0.5	38	0.83	0.38	257	0.78	0.97	534	0.82	1.34	884
40	0.6	56	1.16	0.54	325	1.12	1.39	664			
50	0.8	65	1.56	0.72	379	1.51	1.88	772			
60	0.9	84	1.94	0.90	438	1.91	2.37	883			
70	1.1	93	2.38	1.10	488						
80	1.2	112	2.79	1.29	542						
90	1.4	121	3.28	1.52	586						
100	1.5	140	3.72	1.72	638						
110	1.7	149	4.23	1.96	679						
120	1.8	167	4.70	2.18	728						
130	2.0	177	5.24	2.42	767						
140	2.1	195	5.73	2.65	814						
150	2.3	205	6.28	2.91	853						

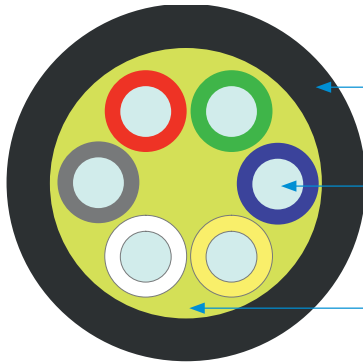
Sag during installation 3 %

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 3 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
20	0.6	14	0.65	0.30	145	0.54	0.67	345	0.53	0.87	604
30	0.9	21	1.03	0.48	206	0.88	1.1	475	0.89	1.45	820
40	1.2	28	1.44	0.67	263	1.27	1.57	591			
50	1.5	35	1.88	0.87	316	1.67	2.08	700			
60	1.8	42	2.34	1.08	365	2.1	2.61	805			
70	2.1	49	2.82	1.31	413						
80	2.4	56	3.31	1.53	460						
90	2.7	63	3.82	1.77	505						
100	3.0	70	4.35	2.01	548						
110	3.3	77	4.89	2.26	590						
120	3.6	84	5.44	2.52	631						
130	3.9	91	6.02	2.79	671						
140	4.2	98	6.59	3.05	711						
150	4.5	105	7.18	3.32	750						
160	4.8	112	7.79	3.61	787						
170	5.1	119	8.39	3.89	825						

# DROP 250 μm

DIN CODE: J/A-N(ZN)H max. 24F

ID: 7A01



Black FR-LSZH outer jacket, UV stable  
(Other jacket colour available on request)

Optical fiber

Aramid yarn

The picture represents a cable with 6 fibers.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter	2-6F	3.0 ± 0.3	mm	EN 60811-1-1	
	8-12F	3.4 ± 0.5			
	16F	3.7 ± 0.5			
	24F	4.0 ± 0.5			
Cable weight	2-6F	10	kg/km		- calculated
	8-12F	12			
	16F	13.5			
	24F	15.5			
Outer jacket thickness		0.8	mm		
Max. tensile strength		500	N	EN 60794-1-2-E1	- max. fiber strain 0.8 % - 200 N fiber strain 0.3 % - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		10	mm	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		12	mm	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation Operation Storage	-5 to +50 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test
		-20 to +60 °C			
		-20 to +60 °C			

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor aerial use.

5

5.1

Sag during installation 1.5 %

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
20	0.3	22	0.53	0.29	142	0.56	0.70	320	0.59	0.96	0.533
30	0.5	30	0.91	0.50	188	0.95	1.19	424			
40	0.6	44	1.29	0.71	237	1.37	1.72	523			
50	0.8	52	1.73	0.96	275						
60	0.9	66	2.16	1.19	318						
70	1.1	74	2.65	1.46	353						
80	1.2	88	3.13	1.73	392						
90	1.4	94	3.62	2.0	420						
100	1.5										
110	1.7										
120	1.8										
130	2.0										
140	2.1										
150	2.3										

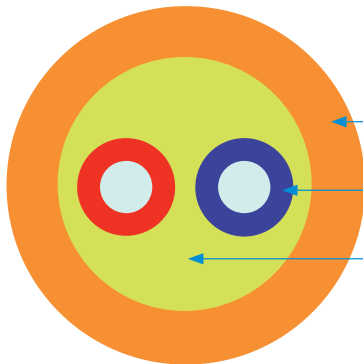
Sag during installation 3 %

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 3 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
20	0.6	11	0.67	0.37	113	0.62	0.78	286	0.64	1.04	495
30	0.9	17	1.09	0.60	157	1.04	1.30	390			
40	1.2	22	1.54	0.85	199	1.49	1.87	483			
50	1.5	28	2.01	1.11	238	1.99	2.48	569			
60	1.8	33	2.52	1.39	274						
70	2.1	39	3.05	1.68	309						
80	2.4	44	3.60	1.99	342						
90	2.7	50	4.17	2.30	374						
100	3.0	55	4.75	2.62	406						
110	3.3	61	5.35	2.95	437						
120	3.6										
130	3.9										
140	4.2										
150	4.5										

# DROP 900 μm

DIN CODE: J/A-VQ(ZN)H Drop 48 2F

ID: Z077



Yellow FR-LSZH outer jacket, UV stable  
(Other jacket colours available on request)

FR-LSZH buffered optical fiber

Waterblocking aramid yarn

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		4.8 ± 0.3	mm	EN 60811-1-1	
Cable weight		25	kg/km		- calculated
Outer jacket thickness		1.2	mm		
Max. tensile strength		800	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - 450 N fiber strain 0.3 % - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 10 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		5	mm	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		10	mm	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation Operation Storage	-5 to +50 °C -20 to +60 °C -20 to +60 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

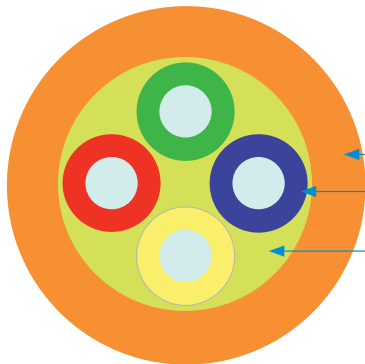
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5.2

# DROP 900 μm

DIN CODE: J/A-VQ(ZN)H Drop max. 4F

ID: Z267



Yellow FR-LSZH outer jacket, UV stable  
(Other jacket colours available on request)

FR-LSZH buffered optical fiber

Waterblocking aramid yarn

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter	1F	2.0 ± 0.1	mm	EN 60811-1-1	
	2F	2.9 ± 0.1			
	4F	3.2 ± 0.1			
Cable weight	1F	5.1	kg/km		- calculated
	2F	7.9			
	4F	10.5			
Outer jacket thickness		0.4	mm		
Buffer diameter		0.9	mm		
Max. tensile strength		300	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - 180 N fiber strain 0.3 % - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	mm	EN 60794-1-2-E1a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	mm	EN 60794-1-2-E1b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation	-5 to +50 °C -20 to +60 °C -20 to +60 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test
	Operation				
	Storage				

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

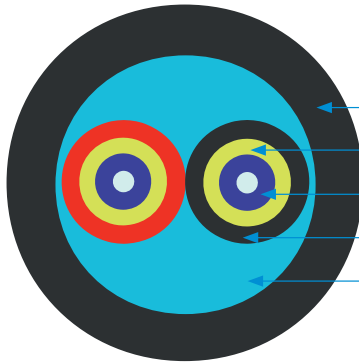
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5.2

# DROP 900 μm

DIN CODE: J/A-VQ(BN)HH max. 2F

ID: Z262



Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)

Waterblocking aramid yarn

FR-LSZH buffered optical fiber

FR-LSZH inner jacket, UV stable

Waterblocking E-glass

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	7.0 ± 0.3	mm	EN 60811-1-1	
Cable weight	42	kg/km		- calculated
Outer jacket thickness	0.8	mm		
Buffer diameter	0.9	mm		
Simplex diameter	2.0	mm		
Max. tensile strength	1,000	N	EN 60794-1-2-E1	- max. fiber strain 0.5 % - 550 N fiber strain 0.3 % - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 10 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	5	mm	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	10	mm	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation Operation Storage	-5 to +50 °C -20 to +60 °C -20 to +60 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

5

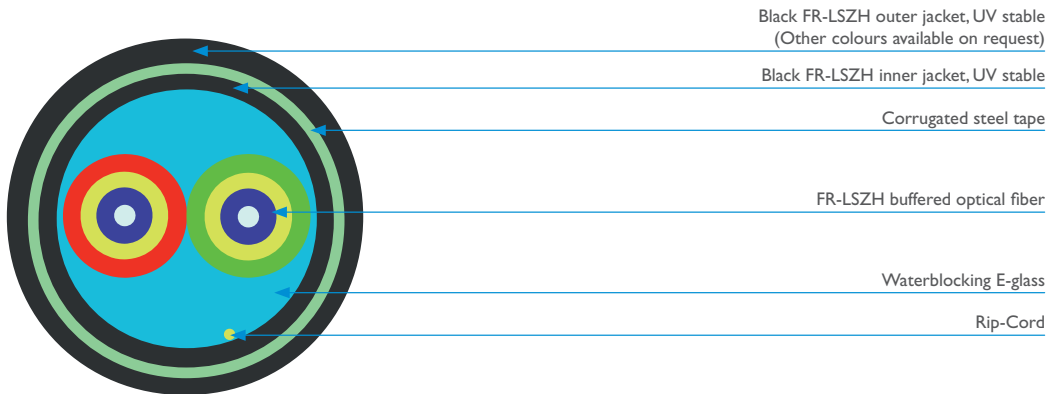
5.2



# DROP 900 μm CST

DIN CODE: J/A-VQ(ZN)H(BN)(SR)H WBF max. 2F

ID: Z258



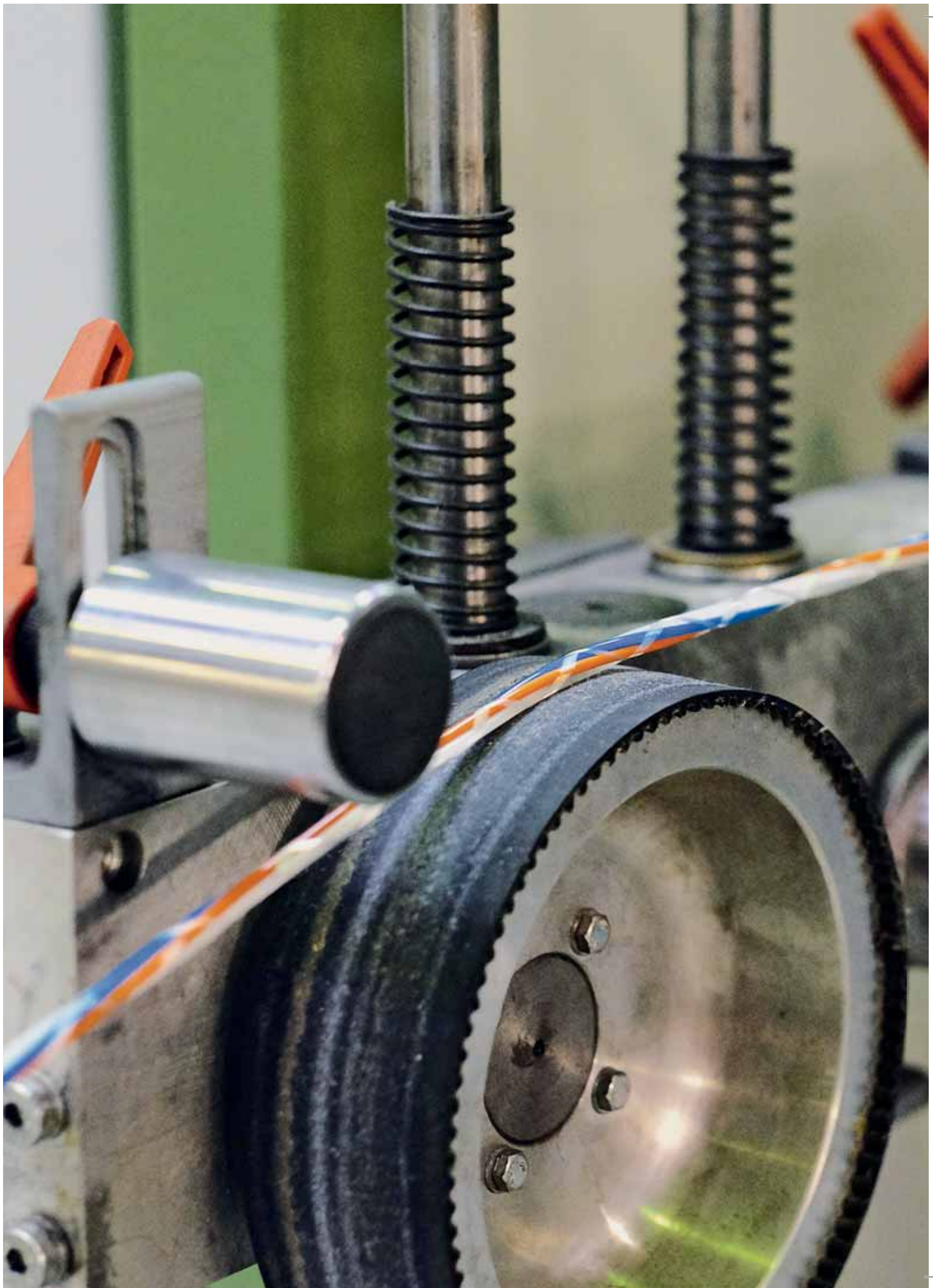
## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		10.5 ± 0.4	mm	EN 60811-1-1	
Cable weight		145	kg/km		- calculated
Inner jacket thickness		0.65	mm		
Outer jacket thickness		1.5	mm		
Buffer diameter		0.9	mm		
Simplex diameter		2.0	mm		
Max. tensile strength		2,000	N	EN 60794-1-2-E1	- max. fiber strain 0.5 % - 1,200 N fiber strain 0.3 % - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		5,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 30 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	mm	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	mm	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation Operation Storage	-5 to +50 °C -20 to +60 °C -20 to +60 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

5

5.2





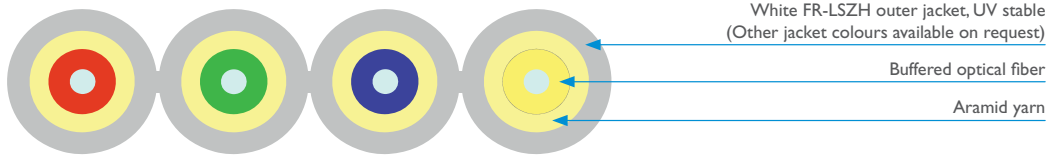
## 6. SPECIAL

- 6.1 TIGHT-BUFFERED
- 6.2 CLT
- 6.3 MLT
- 6.4 HIGH-FIBER COUNT
- 6.5 FIRE RESISTANT
- 6.6 HYBRID
- 6.7 ARCTIC
- 6.8 SUBMARINE SWA

# QUADPLEX CABLE

DIN CODE: J-V(ZN)H 4×1F

ID: 9Ax1



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	180 N
Crush resistance		*E3	300 N/10 cm
Impact resistance		*E4	3 impacts (w/4 Nm)
Min. bend radius (long term)		*E11A	10× cable diameter (no load)
Min. bend radius (short term)		*E11B	15x cable diameter (load)
Repeat bending		*E6	2,000 cycles (60 mm/50 N)
Kink		*E10	30 mm
Toughness		*E17	0.0188 Nm <sup>2</sup>
Temperature range	Installation Operation Storage	*F1	-5 °C to +50 °C -5 °C to +50 °C -5 °C to +50 °C
Cable informative weight (calc.)			20 kg/km
Standard put-up length			2,100 m
Packaging			Plywood drum
Buffer diameter			0.9 mm
Simplex diameter			2.0 ± 0.1 mm
Cable width			8.6 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for internal cabling in FTTx application.

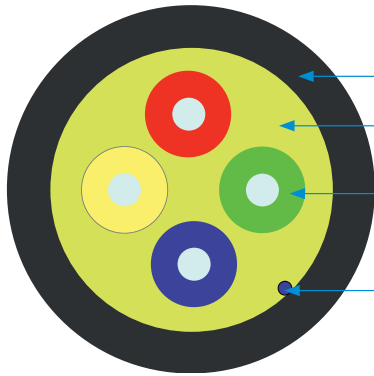
6

6.1

# TACTICAL CABLE (HFFR)

DIN CODE: J/A-VQ(ZN) I I Y max. 4F

ID: 5VA7



Halogen free flame retardant (HFFR) black Polyurethane  
(Other jacket colours available on request)

Waterblocking aramid yarn

Acrylate tight buffer

Rip-Cord

The picture represents a cable with 4 optical fibres.

## Mechanical and Environmental properties

Test		Method		Value/Unit
Tensile strength		*E1A	2F	1,800 N
			4F	2,000 N
Crush resistance		*E3		2,000 N/10 cm
Impact resistance		*E4		3 impacts (w/15 Nm)
Min. bend radius		*E11		50 mm
				20 mm (G.657.A&B fiber)
Torsion			*E7	10 cycles $\pm$ 180°, 50 cm/5 kg
Repeat bending			*E6	10,000 cycles (50 mm/2 kg)
Temperature range	Installation Operation Storage	*F1		-15 °C to +50 °C
				-40 °C to +85 °C
				-40 °C to +85 °C
Cable informative nominal weight (calc.)			2F	23 kg/km
			4F	27 kg/km
Standard put-up length				2,100 m
Packaging				Plywood drum
Buffer nominal diameter				0.9 mm
Outer jacket minimal thickness				1.2 $\pm$ 0.2 mm
Cable outer diameter			2F	5.0 $\pm$ 0.5 mm
			4F	5.5 $\pm$ 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use. The cable has good protection against chemicals, is resistant to abrasion.

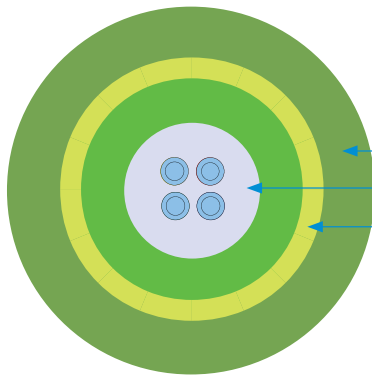
6

6.1

# CLT MILITARY

DIN CODE: J/A-DQ(ZN)11Y max. 4F

ID: Z272



Green PUR outer jacket, RAL 6003  
(Other jacket colours available on request)

Gel filled PBT loose tube with optical fibers

Waterblocking aramid yarn

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	4.6 ± 0.2	mm	EN 60811-1-1	
Cable weight	22.5	kg/km		- calculated
Outer jacket thickness	1.0 ± 0.2	mm		
Loose tube diameter	2.2	mm		
Max. tensile strength	2,300	N	EN 60794-1-2-E1	- max. fiber strain 0,7 % - long term 1,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB, full reversible - no increase attenuation after the test
Crush resistance test	2,500	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.00 dB, full reversible - 4,000 N max. attenuation variation 4.7 dB, full reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Repeated Bending	50,000	Cycles	EN 60794-1-2-E6	- max. attenuation variation ≤ 0.05 dB, reversible
Torsion	10	Cycles	EN 60794-1-2-E7	- max. attenuation variation ≤ 0.05 dB, reversible - length 500 mm - load 5 kg - angle ± 180°
Kink	20	mm	EN 60794-1-2-E10	- max. attenuation variation ≤ 0.05 dB, full reversible - loop Ø 5 mm attenuation variation ≤ 2.7 dB, full reversible - loop Ø 1 mm attenuation variation ≤ 20 dB, full reversible
Compound flow		pass	EN 60794-1-2-E4	- 24 hrs - 70 °C

6

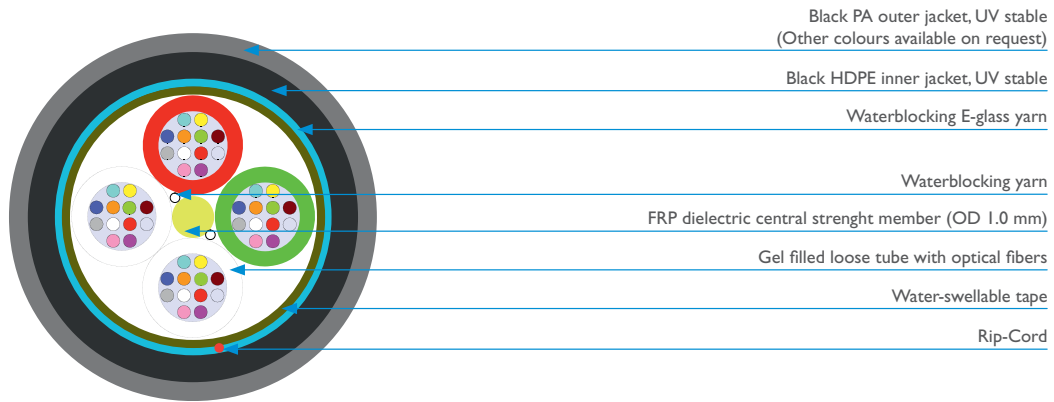
6.2

## Mechanical and Environmental properties

Test		Value/Unit	Method	Comment
Stiffness	0.1 m	0.005066095 Nm <sup>2</sup>	EN 60794-1-2-E17a	
	0.2 m	0.004601172 Nm <sup>2</sup>		
	0.5 m	0.003333332 Nm <sup>2</sup>		
	0.1 m	0.007666659 Nm <sup>2</sup>	EN 60794-1-2-E17b	
	0.2 m	0.011874997 Nm <sup>2</sup>		
Min. bend radius (no load)		30 mm	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB, full reversible
Min. bend radius (load)		35 mm	EN 60794-1-2-E11b	- 10 cycles max. attenuation variation ≤ 0.05 dB, full reversible at 20 °C - 5 cycles max. attenuation variation ≤ 0.1 dB, full reversible at -15 °C
Moisture resistance test		pass	EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +80 °C -40 to +80 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.5 dB - dwell time acc. EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation
Ageing		pass	EN 60794-1-22-F9	- max. attenuation variation ≤ 0.05 dB - 168 hrs 85 °C
External freezing test		pass	EN 60794-1-22-F15	
Tube bending loop		pass	EN 60794-1-22-G7	- 5 cycles

Note: Tested at 1,300 nm MM fiber 50/125.

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor installation.

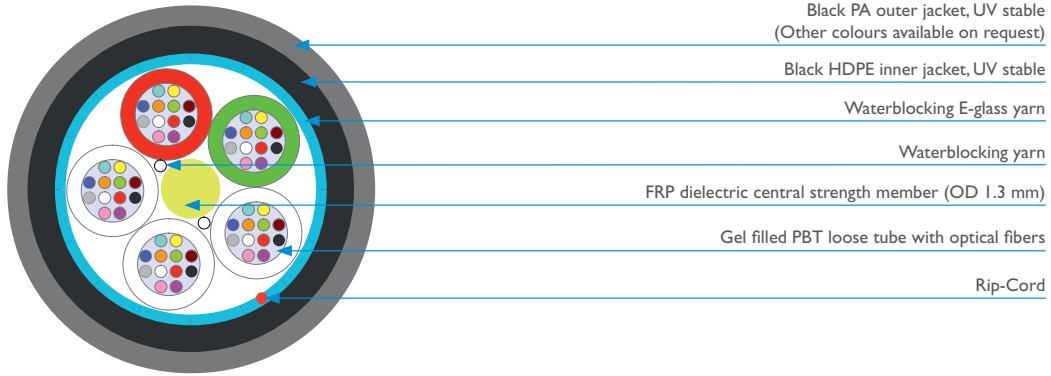


## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		10.5 ± 0.4	mm	EN 60811-1-1	
Cable weight		89	kg/km		- calculated
Inner jacket thickness		1.5	mm		
Outer jacket thickness		0.8	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		1,300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 400 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has higher level of mechanical protection.

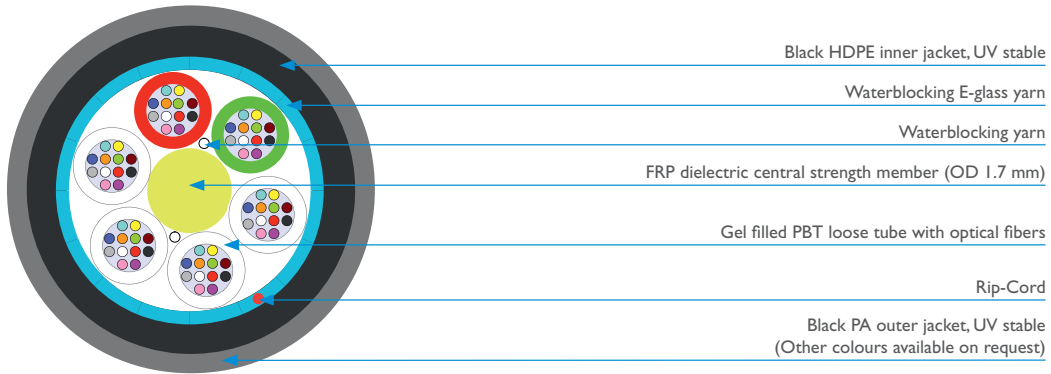




## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		9.0 ± 0.4	mm	EN 60811-1-1	
Cable weight		74	kg/km		- calculated
Inner jacket thickness		1.3	mm		
Outer jacket thickness		0.8	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		1,300	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 370 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

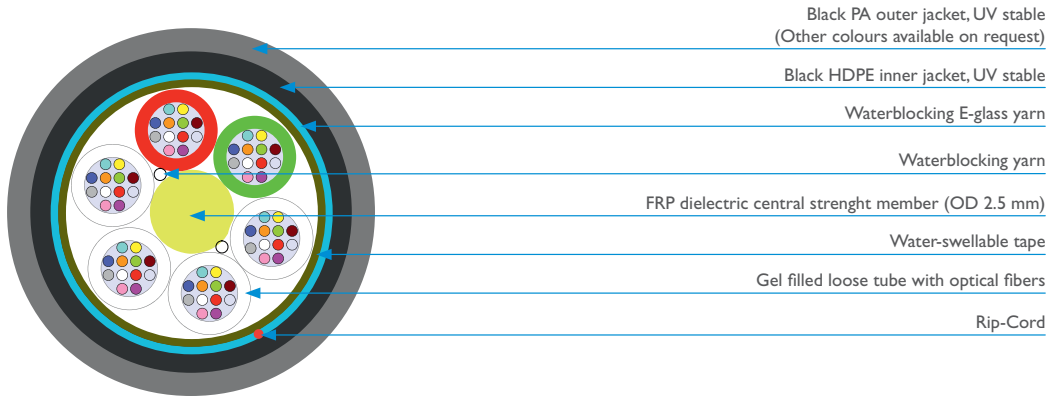
Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has higher level of mechanical protection.



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	9.4 ± 0.4	mm	EN 60811-1-1	
Cable weight	83	kg/km		- calculated
Inner jacket thickness	1.3	mm		
Outer jacket thickness	0.8	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	1,800	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 600 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has higher level of mechanical protection.



### Mechanical and Environmental properties

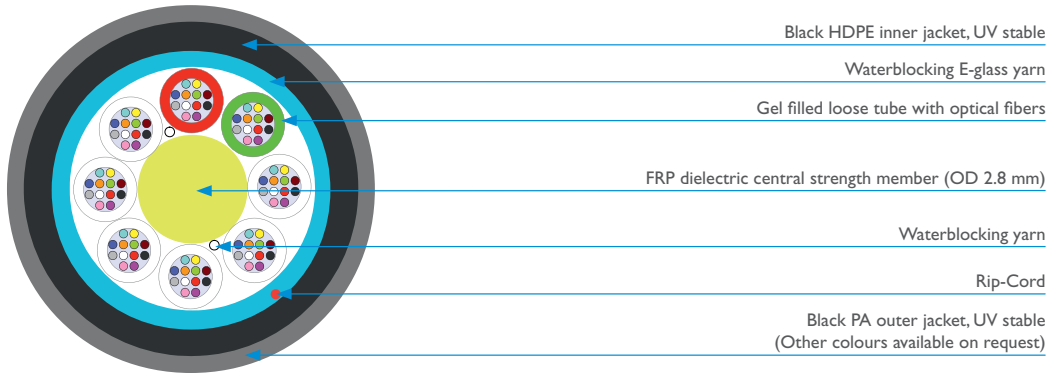
Test	Value	Unit	Method	Comment
Cable outer diameter	12.1 ± 0.4	mm	EN 60811-1-1	
Cable weight	124	kg/km		- calculated
Inner jacket thickness	1.5	mm		
Outer jacket thickness	0.8	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	2,400	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1.100 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has higher level of mechanical protection.

# MLT

DIN CODE:A-DQ(BN)2Y4Y 8×1.7 max. 96F

ID: PE06



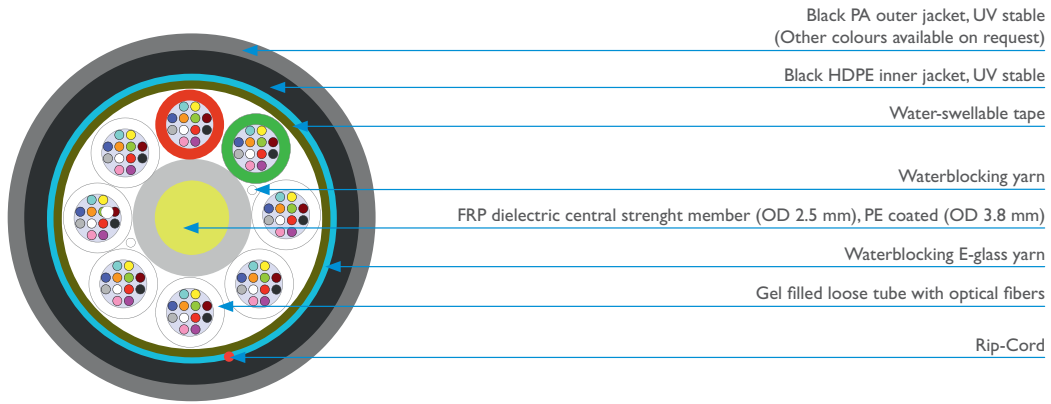
## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	10.8 ± 0.4	mm	EN 60811-1-1	
Cable weight	109	kg/km		- calculated
Inner jacket thickness	1.3	mm		
Outer jacket thickness	0.8	mm		
Loose tube diameter	1.7	mm		
Max. tensile strength	3,700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,800 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has higher level of mechanical protection.

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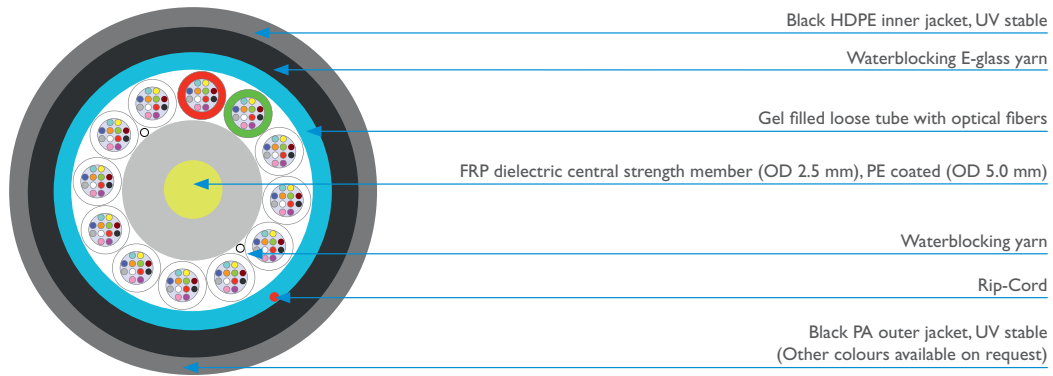
6.3



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	13.5 ± 0.4	mm	EN 60811-1-1	
Cable weight	153	kg/km		- calculated
Inner jacket thickness	1.5	mm		
Outer jacket thickness	0.8	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	3,400	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 2,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

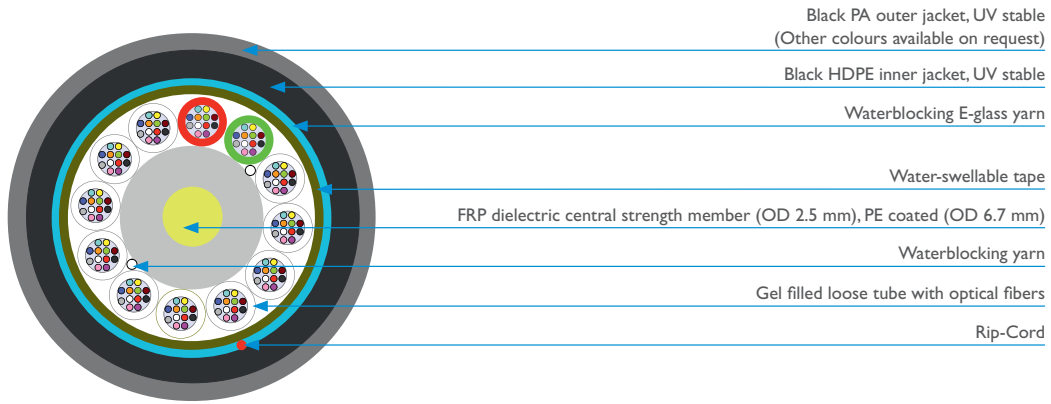
Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has higher level of mechanical protection.



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		12.9 ± 0.4	mm	EN 60811-1-1	
Cable weight		149	kg/km		- calculated
Inner jacket thickness		1.3	mm		
Outer jacket thickness		0.8	mm		
Loose tube diameter		1.7	mm		
Max. tensile strength		6,000	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 4,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,500	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has higher level of mechanical protection.



## Mechanical and Environmental properties

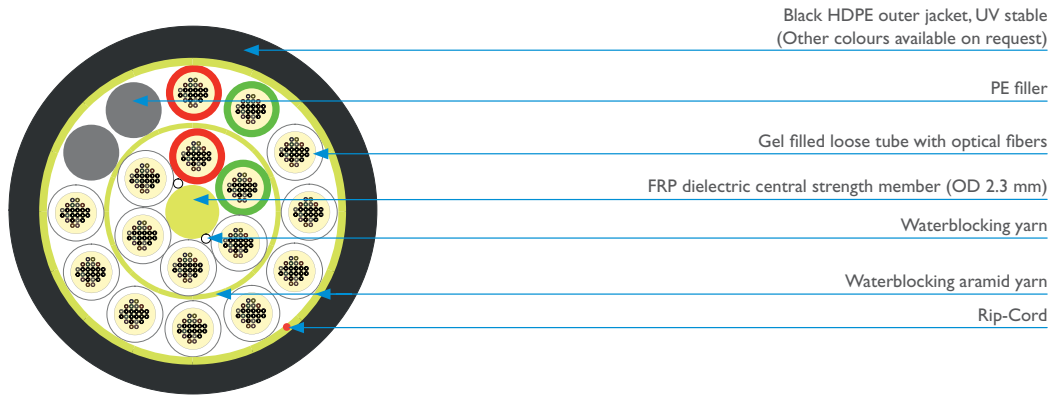
Test	Value	Unit	Method	Comment
Cable outer diameter	16.4 ± 0.4	mm	EN 60811-1-1	
Cable weight	220	kg/km		- calculated
Inner jacket thickness	1.5	mm		
Outer jacket thickness	0.8	mm		
Loose tube diameter	2.3	mm		
Max. tensile strength	6,000	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 4,200 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test	2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use. The cable has higher level of mechanical protection.

# MLT HIGH-FIBER COUNT & REDUCE OD

DIN CODE:A-DQ(ZN)2Y 18×2.0 max. 432F

ID: Z156



The picture represents a cable with 192 fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	12.7 ± 0.3	mm	EN 60811-1-1	
Cable weight	132	kg/km		- calculated
Outer jacket thickness	1.2	mm		
Loose tube diameter	2.0	mm		
Max. allowable tension	1,100	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 300 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test	1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 10 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

6

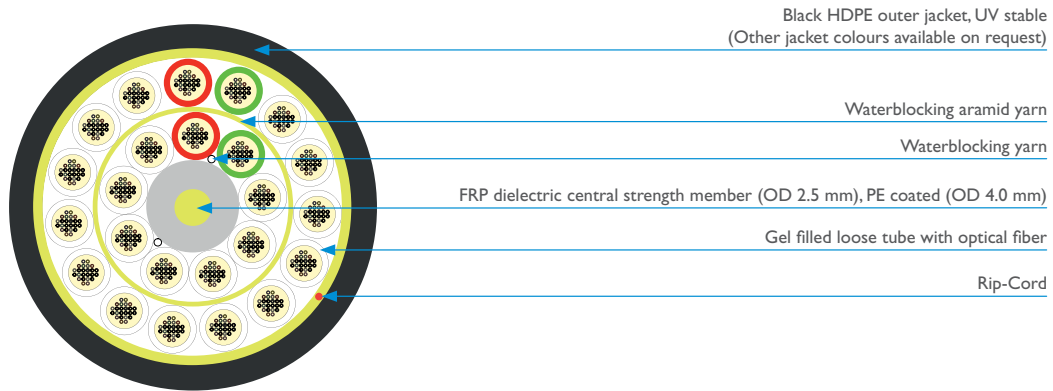
6.4



# MLT HIGH-FIBER COUNT & REDUCE OD

DIN CODE: A-DQ(ZN)2Y 24×2.0 max. 576F

ID: Z157



## Mechanical and Environmental properties

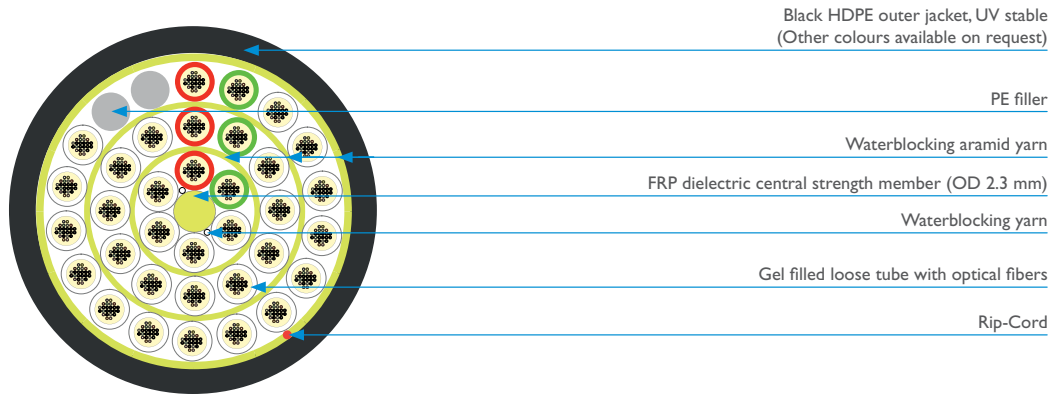
Test	Value	Unit	Method	Comment
Cable outer diameter	14.4 ± 0.3	mm	EN 60811-1-1	
Cable weight	172	kg/km		- calculated
Outer jacket thickness	1.2	mm		
Loose tube diameter	2.0	mm		
Max. allowable tension	1,800	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 900 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test	1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 10 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# MLT HIGH-FIBER COUNT & REDUCE OD

DIN CODE: A-DQ(ZN)2Y 36×2.0 max. 864F

ID: Z158



The picture represents a cable with 816 optical fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	16.7 ± 0.3	mm	EN 60811-1-1	
Cable weight	223	kg/km		- calculated
Outer jacket thickness	1.2	mm		
Loose tube diameter	2.0	mm		
Max. allowable tension	1,100	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 300 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test	1,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 10 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

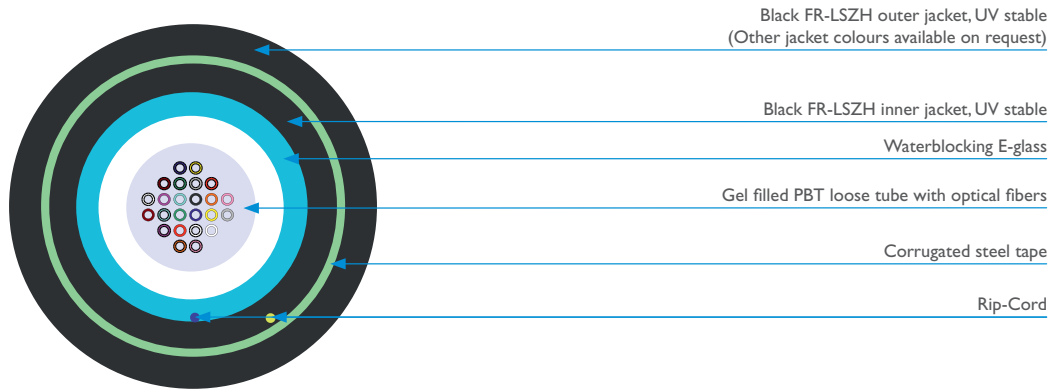
6

6.4

# CLT FIRE RESISTANT

DIN CODE: J/A-DQ(ZN)H(SR)H WBF FSC I 80 max. 24F

ID: Z281



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		12.5	mm	EN 60811-1-1	
Cable weight		209	kg/km		- calculated
Outer jacket thickness		2.0	mm		
Loose tube diameter		3.2	mm		
Max. tensile strength		2,000	N	EN 60794-1-2-E1	- max. attenuation variation $\leq 0.1$ dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		10,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation $\leq 0.1$ dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation $\leq 0.1$ dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation $\leq 0.2$ dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation $\leq 0.2$ dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +80 °C -40 to +80 °C		EN 60794-1-22-F1	- max. attenuation variation $\leq 0.1$ dB at 1,550 nm - dwell time acc. to EN 60794-1-22 F1 - no increase attenuation after the test - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for fire.

More on page No. 262.

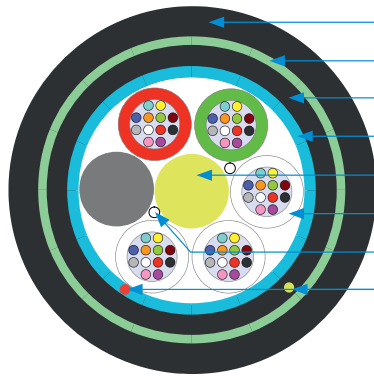
6

6.5

# MLT FIRE RESISTANT

DIN CODE: J/A-DQ(ZN)H(SR)H WBF FSC I80 max. I44F

ID: Z282 / Z283 / Z284



Black FR-LSZH outer jacket, UV stable  
(Other jacket colours available on request)

Corrugated steel tape

Black FR-LSZH inner jacket, UV stable

Waterblocking E-glass

FRP dielectric central strength member, PE coated

Gel filled PBT loose tube with optical fibers

Waterblocking yarn

Rip-Cord

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter 6×1.7	14.5	mm	EN 60811-1-1	
Cable outer diameter 8×1.7	15.5	mm	EN 60811-1-1	
Cable outer diameter 12×1.7	17.5	mm	EN 60811-1-1	
Cable weight 6×1.7	268	kg/km		- calculated
Cable weight 8×1.7	310	kg/km		- calculated
Cable weight 12×1.7	391	kg/km		- calculated
Outer jacket thickness	2.0	mm		
Loose tube diameter	1.7	mm		
Maximum tensile strength 6×1.7	2,900	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,300 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Maximum tensile strength 8×1.7	6,700	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 4,000 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Maximum tensile strength 12×1.7	13,000	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 8,700 N - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Crush resistance test		N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test			EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without armouring
Temperature test	Installation Operation Storage	-15 to +50 °C -30 to +80 °C -40 to +80 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1550 nm - dwell time acc. To EN 60794-1-22 F1 - no increase attenuation after the test - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before Installation

Cable life time – minimum 30 years. This cable is suitable suitable for fire.

More on page No. 262.

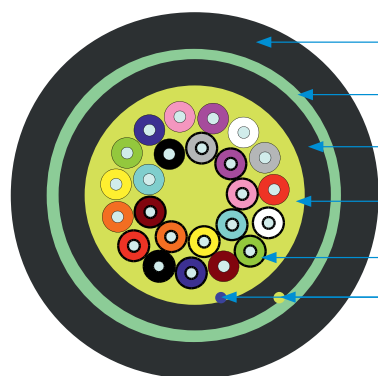
6

6.5

# DISTRIBUTION FIRE RESISTANT

DIN CODE: J/A-VQ(ZN)H(SR)H WBF FSC I 80 max. 24F

ID: Z285



Black FR-LSZH outer jacket, UV stable  
(Other jacket colours available on request)

Corrugated steel tape

Black FR-LSZH inner jacket, UV stable

Waterblocking aramid yarn

FRNC buffered optical fiber

Rip-Cord

## Mechanical and Environmental properties

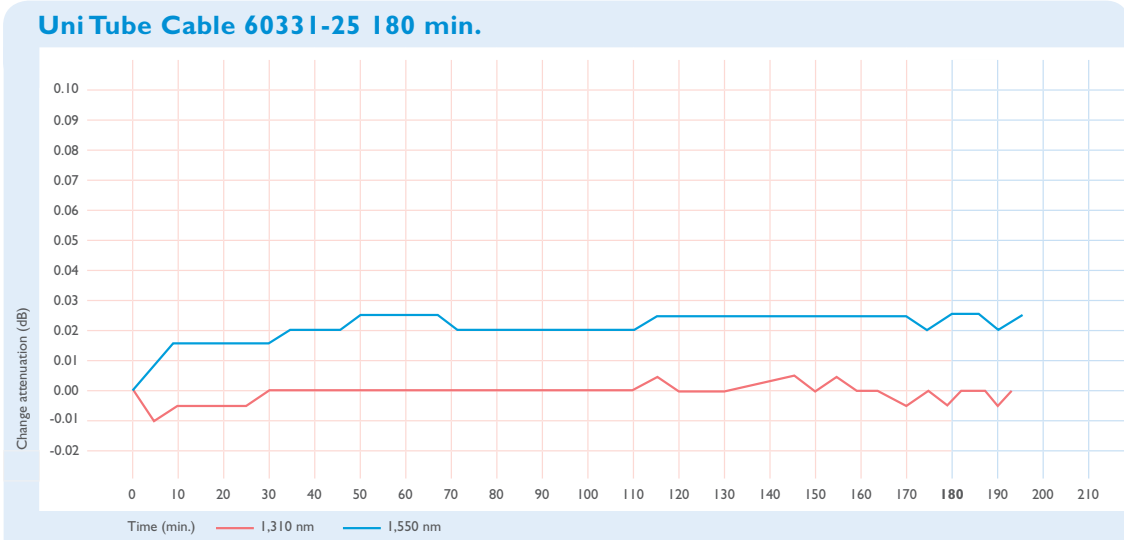
Test	Value	Unit	Method	Comment
Cable outer diameter 4 fibers	12.5	mm	EN 60811-1-1	
Cable outer diameter 6 fibers	13.5	mm	EN 60811-1-1	
Cable outer diameter 8 fibers	13.5	mm	EN 60811-1-1	
Cable outer diameter 12 fibers	15.5	mm	EN 60811-1-1	
Cable outer diameter 16 fibers	15.5	mm	EN 60811-1-1	
Cable outer diameter 24 fibers	17.5	mm	EN 60811-1-1	
Cable weight 4 fibers	204	kg/km		- calculated
Cable weight 6 fibers	231	kg/km		- calculated
Cable weight 8 fibers	236	kg/km		- calculated
Cable weight 12 fibers	293	kg/km		- calculated
Cable weight 16 fibers	297	kg/km		- calculated
Cable weight 24 fibers	351	kg/km		- calculated
Outer jacket thickness	2.0	mm		
Maximum tensile strength 4 fibers	1,400	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Maximum tensile strength 6 fibers	1,500	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Maximum tensile strength 8 fibers	2,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Maximum tensile strength 12 fibers	2,200	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Maximum tensile strength 16 fibers	2,500	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Maximum tensile strength 24 fibers	3,000	N	EN 60794-1-2-E1	- max. fiber strain 0.6 % - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Crush resistance test	5,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 20 Nm, slightly damaged jacket - impact energy 25 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1   a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1   b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Temperature test	-5 to +50 °C -20 to +80 °C -30 to +80 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0,15 dB at 1,550 nm - dwell time acc. to EN 60794-1-22 F1 - no increase attenuation after the test - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before Installation

Cable life time – minimum 30 years. This cable is suitable for fire.

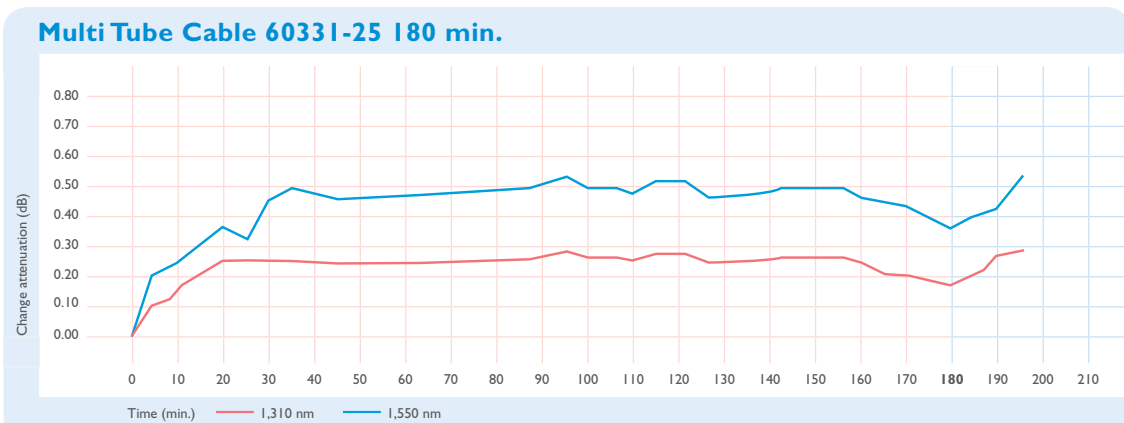
More on page No. 262.

# GRAPHS

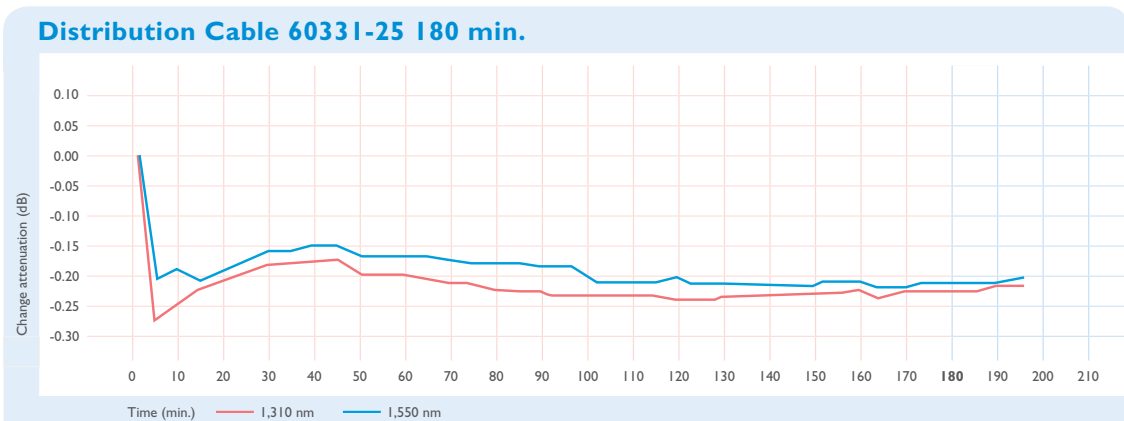
Z281



Z282 / Z283 / Z284



Z285



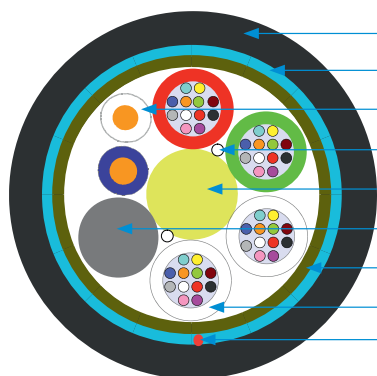
6

6.5

# HYBRID

DIN CODE: A-DSQ(BN)2Y 5×2.3 + 1×2×0.6 max. 60F

ID: Z001



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass yarn

Cu pair

Waterblocking yarn

FRP dielectric central strength member (OD 2.5 mm)

PE filler

Water-swellable tape

PBT loose tube with optical fibers

Rip-Cord

The picture represents a cable with 48 fibers.

## Mechanical and Environmental properties

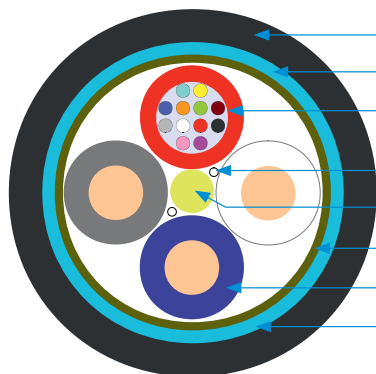
Test		Value	Unit	Method	Comment
Cable outer diameter		10.7 ± 0.4	mm	EN 60811-1-1	
Cable weight		93	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. tensile strength		2,500	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 1,200 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

# HYBRID

DIN CODE: A-DSQ(BN)2Y 1×2.5+3×1Cu (12F) – 3×2.5+1×1Cu (36F)

ID: Z078



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

Gel filled loose tube with optical fibers

Waterblocking yarn

FRP dielectric central strength member (OD 1.0 mm)

Water-swellable tape

Cu wire (ø 1.4/2.6 mm)

Rip-Cord

The picture represents a cable with 12 optical fibers and 3 Cu wire.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		9.8 ± 0.4	mm	EN 60811-1-1	
Cable weight	12 F + 3 Cu	123	kg/km		- calculated
	24 F + 2 Cu	106			
	36 F + 1 Cu	90			
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.5	mm		
Max. tensile strength		2,000	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 700 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

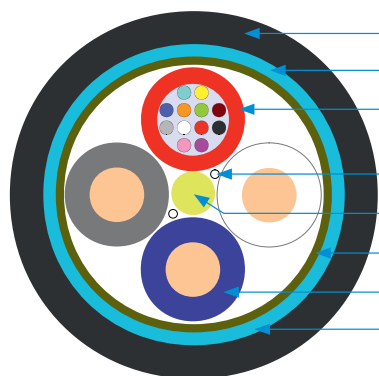
6  
6.6



# HYBRID

DIN CODE: J/A-DSQ(BN)H 1×2.5+3×1Cu (12F) – 3×2.5+1×1Cu (36F)

ID: Z130



- Black FR-LSZH outer jacket, UV stable  
(Other colours available on request)
- Waterblocking E-glass
- Gel filled loose tube with optical fibers
- Waterblocking yarn
- FRP dielectric central strength member (OD 1.0 mm)
- Water-swellaable tape
- Cu wire (ø 1.4/2.6 mm)
- Rip-Cord

The picture represents a cable with 12 optical fibers and 3 Cu wire.

## Mechanical and Environmental properties

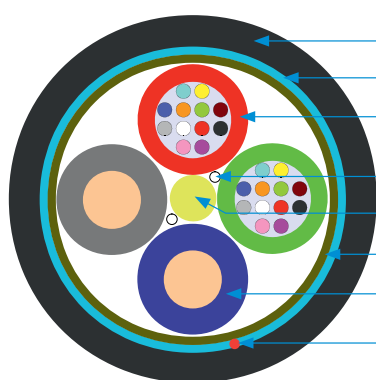
Test		Value	Unit	Method	Comment
Cable outer diameter		9.8 ± 0.4	mm	EN 60811-1-1	
Cable weight	12 F + 3 Cu	145	kg/km		- calculated
	24 F + 2 Cu	129			
	36 F + 1 Cu	113			
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.5	mm		
Max. tensile strength		2,000	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 700 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor use.

# HYBRID

DIN CODE: A-DSQ(BN)2Y 1×2.5+3×1Cu (12F) – 3×2.5+1×1Cu (36F)

ID: Z131



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

Gel filled loose tube with optical fibers

Waterblocking yarn

FRP dielectric central strength member (OD 1.0 mm)

Water-swellable tape

Cu wire (ø 1.8/2.7 mm)

Rip-Cord

The picture represents a cable with 24 optical fibers and 2 Cu wire.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		10.1 ± 0.4	mm	EN 60811-1-1	
Cable weight	12 F + 3 Cu	138	kg/km		- calculated
	24 F + 2 Cu	118			
	36 F + 1 Cu	97			
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.5	mm		
Max. tensile strength		2,000	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 200 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without outer jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor use.

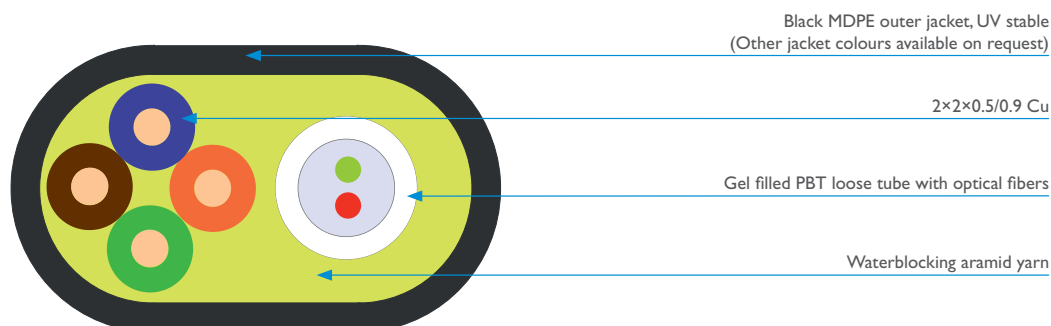
6

6.6

# HYBRID

DIN CODE: A-DSQ(ZN)2Y 2F + 2×2×0.5/0.9Cu

ID: Z137



## Mechanical and Environmental properties

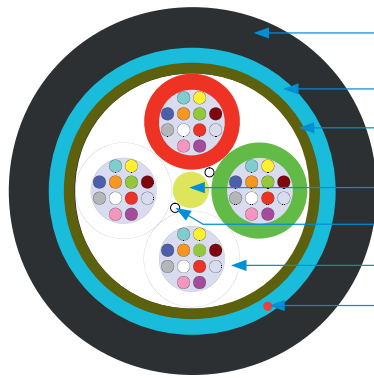
Test		Value	Unit	Method	Comment
Cable outer diameter		3.8 × 5.3 ± 0.4	mm	EN 60811-1-1	
Cable weight		20	kg/km		- calculated
Outer jacket thickness		0.6	mm		
Loose tube diameter		1.5	mm		
Max. tensile strength		600	N	EN 60794-1-2-E1	- max. fiber strain 0.33 % - long term 100 N - no fiber strain for long term load - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 8 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		10	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (load)		15	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Temperature range	Installation Operation Storage	-5 to +50 °C -5 to +60 °C -5 to +60 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for external cabling in FTTx application.

# MLT ARCTIC

DIN CODE:A-DQ(BN)2Y ARC 4×2.5 max. 48F

ID: Z010



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

Water-swellable tape

FRP dielectric central strength member (OD 1.0 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	1,000 N
Crush resistance		*E3	2,500 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	15× cable diameter (no load)
		*E11B	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -50 °C to +70 °C -50 °C to +70 °C
Cable informative nominal weight (calc.)			78 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			2.5 mm
Outer jacket thickness			1.5 ± 0.2 mm
Cable outer diameter			9.9 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor use, extreme low temperatures.

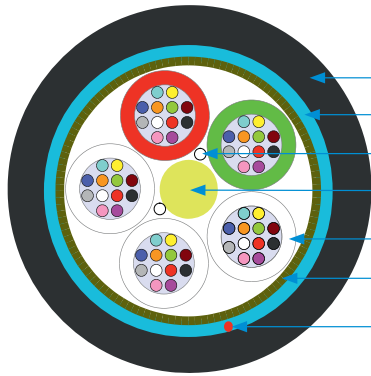
6

6.7

# MLT ARCTIC

DIN CODE:A-DQ(BN)2Y ARC 5×2.5 max. 60F

ID:Z012



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

Waterblocking yarn

FRP dielectric central stretch member (OD 1.8 mm)

Gel filled loose tube with optical fiber

Water-swellaable tape

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1A	2,000 N
Crush resistance	*E3	2,500 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11A	15× cable diameter (no load)
	*E11B	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow		30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-50 °C to +70 °C
		-50 °C to +70 °C
Cable informative nominal weight (calc.)		95 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.5 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		10.8 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

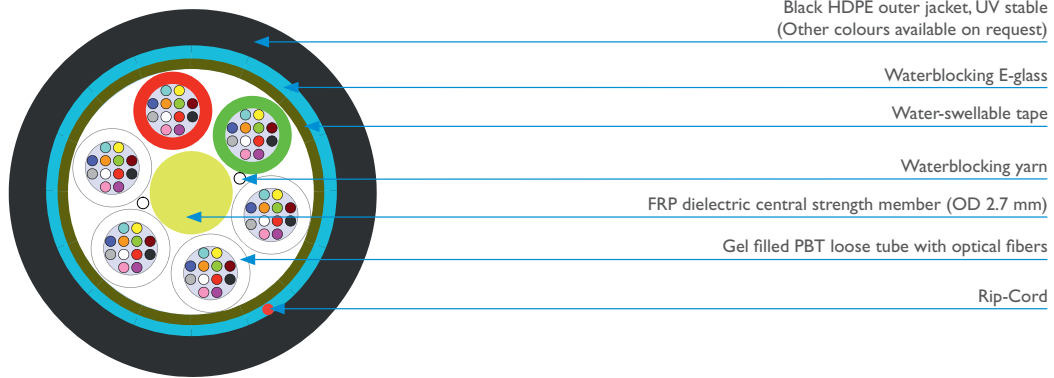
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, extreme low temperatures.

# MLT ARCTIC

DIN CODE:A-DQ(BN)2Y ARC 6×2.5 max. 72F

ID: Z030



## Mechanical and Environmental properties

Test	Method	Value/Unit	
Max. tensile strength	*E1A	4,000 N	
Crush resistance	*E3	2,500 N/10 cm	
Impact resistance	*E4	3 impacts (w/20 Nm)	
Min. bend radius	*E11A	15× cable diameter (no load)	
	*E11B	20× cable diameter (load)	
Moisture resistance	*F5	passed	
Compound flow	*E14	30 cm/24 hrs/70 °C passed	
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C
			-50 °C to +70 °C
			-50 °C to +70 °C
Cable informative nominal weight (calc.)		118 kg/km	
Standard put-up length		2,100 m; 4,100 m	
Packaging		Plywood drum	
Loose tube diameter		2.5 mm	
Outer jacket thickness		1.5 ± 0.2 mm	
Cable outer diameter		11.8 ± 0.4 mm (measured acc. to EN 60811-1-1)	

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, extreme low temperatures.

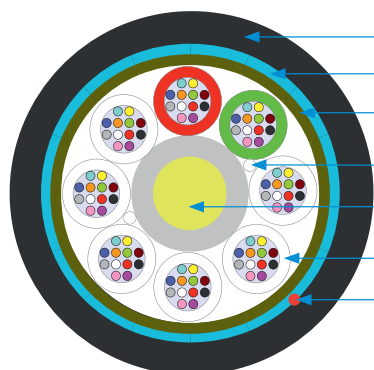
6

6.7

# MLT ARCTIC

DIN CODE:A-DQ(BN)2Y ARC 8×2.5 max. 96F

ID: Z033



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass

Water-swellable tape

Waterblocking yarn

FRP dielectric central strength member (OD 2.7 mm), PE coated (OD 4.2 mm)

Gel filled PBT loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1A	6,000 N
Crush resistance	*E3	2,500 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11A	15× cable diameter (no load)
	*E11B	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-50 °C to +70 °C
	Installation	-50 °C to +70 °C
	Operation	
	Storage	
Cable informative nominal weight (calc.)		145 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood drum
Loose tube diameter		2.5 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		13.2 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

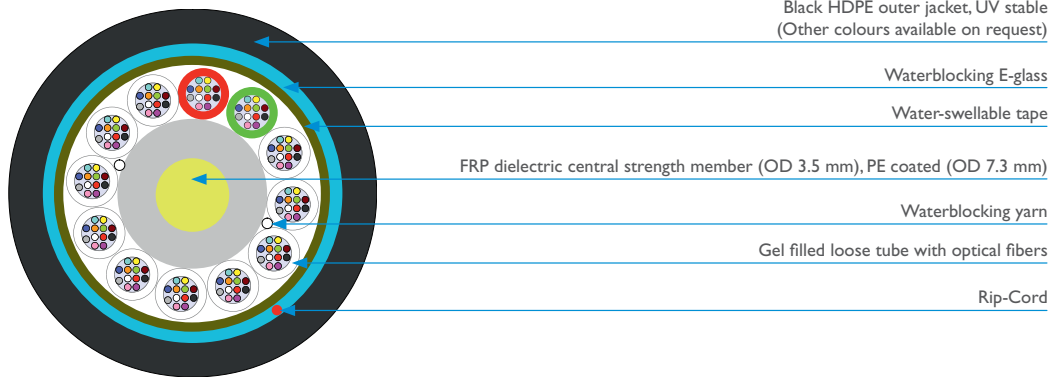
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, extreme low temperatures.

# MLT ARCTIC

DIN CODE:A-DQ(BN)2Y ARC 12x2.5 max. 144F

ID: Z063



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	8,000 N
Crush resistance		*E3	2,500 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	15× cable diameter (no load)
		*E11B	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage		-15 °C to +50 °C
			-50 °C to +70 °C
			-50 °C to +70 °C
Cable informative nominal weight (calc.)			220 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood drum
Loose tube diameter			2.5 mm
Outer jacket thickness			1.5 ± 0.2 mm
Cable outer diameter			16.3 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, extreme low temperatures.

6

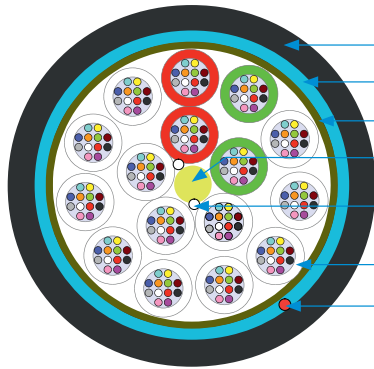
6.7



# MLT ARCTIC

DIN CODE:A-DQ(BN)2Y ARC 16x2.5 max. 192F

ID:Z168



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking E-glass yarn

Water-swellable tape

FRP dielectric central strength member (OD 1.8 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1A	2,800 N
Crush resistance	*E3	2,500 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11A	15× cable diameter (no load)
	*E11B	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-50 °C to +70 °C
		-50 °C to +70 °C
Cable informative nominal weight (calc.)		190 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood or Solid wooden drum
Loose tube diameter		2.5 mm
Outer jacket thickness		1.5 ± 0.2 mm
Cable outer diameter		15.7 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

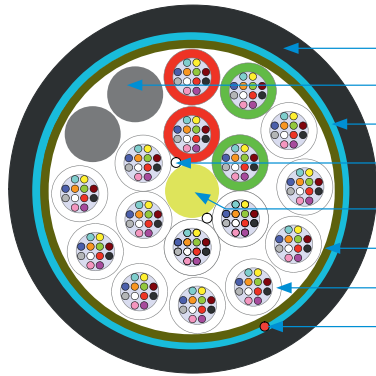
Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, extreme low temperatures.

# MLT ARCTIC

DIN CODE:A-DQ(BN)2Y ARC 18×2.5 max. 216F

ID: Z232



Black HDPE outer jacket, UV stable  
(Other colours available on request)

PE filler

Waterblocking E-glass

Waterblocking yarn

FRP dielectric central strength member (OD 2.7 mm)

Water-swellable tape

Gel filled loose tube with optical fibers

Rip-Cord

The picture represents a cable with 192 optical fibers.

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1A	4,100 N
Crush resistance		*E3	2,500 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11A	15× cable diameter (no load)
		*E11B	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage		-15 °C to +50 °C
			-50 °C to +70 °C
			-50 °C to +70 °C
Cable informative nominal weight (calc.)			224 kg/km
Standard put-up length			2,100 m; 4,100 m
Packaging			Plywood or Solid wooden drum
Loose tube diameter			2.5 mm
Outer jacket thickness			1.5 ± 0.2 mm
Cable outer diameter			16.5 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor use, extreme low temperatures.

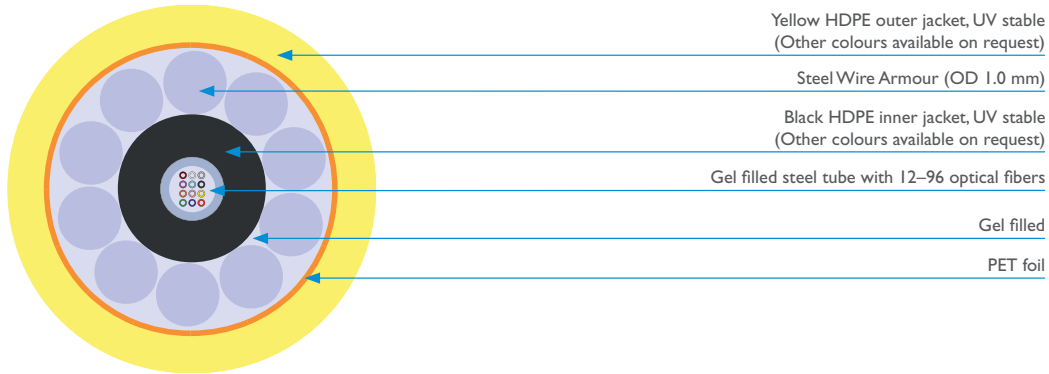
6

6.7

# CLT SUBMARINE SWA

DIN CODE: Submarine SWA Cable max. 96F

ID: NI40098



The picture represents a cable with 12 optical fibers.

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		14.0 ± 0.5	mm	EN 60811-1-1	
Cable weight	6F	301	kg/km		- calculated
	12F	305			
	24F	307			
	48F	309			
	96F	326			
Outer jacket thickness		2.0 ± 0.2	mm		
Stainless Steel Tubes	6F	1.8	mm		- stainless steel 1,4301 = ANSI 304
	12F	2.8			
	24F	3.2			
	48F	3.7			
	96F	5.3			
Max. tensile strength		16	kN	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 5 kN - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test		10	kN	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 50 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (no load)		500	mm	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (load)		600	mm	EN 60794-1-2-E1 I b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Temperature range	Installation	-15 to +50 °C -40 to +80 °C -40 to +80 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation
	Operation				
	Storage				

Cable life time – minimum 30 years. This cable is suitable for underwater installation.

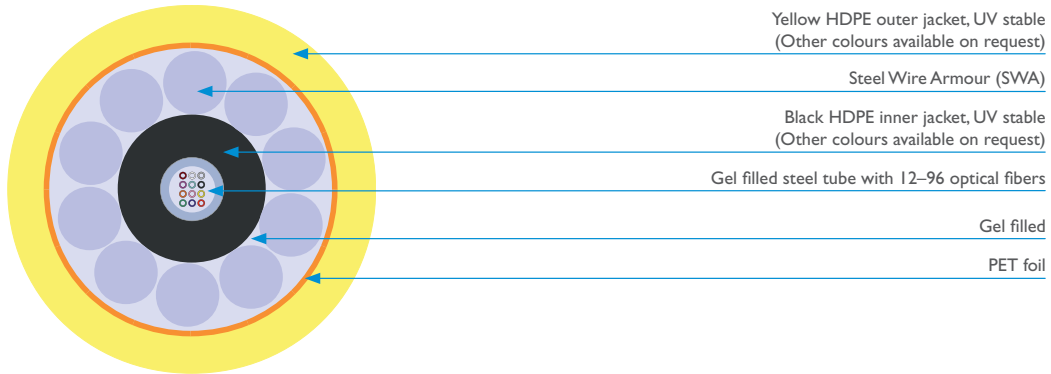
6

6.8

# CLT SUBMARINE SWA

DIN CODE: Submarine SWA Cable max. 96F

ID: N131756



The picture represents a cable with 12 optical fibers.

## Mechanical and Environmental properties

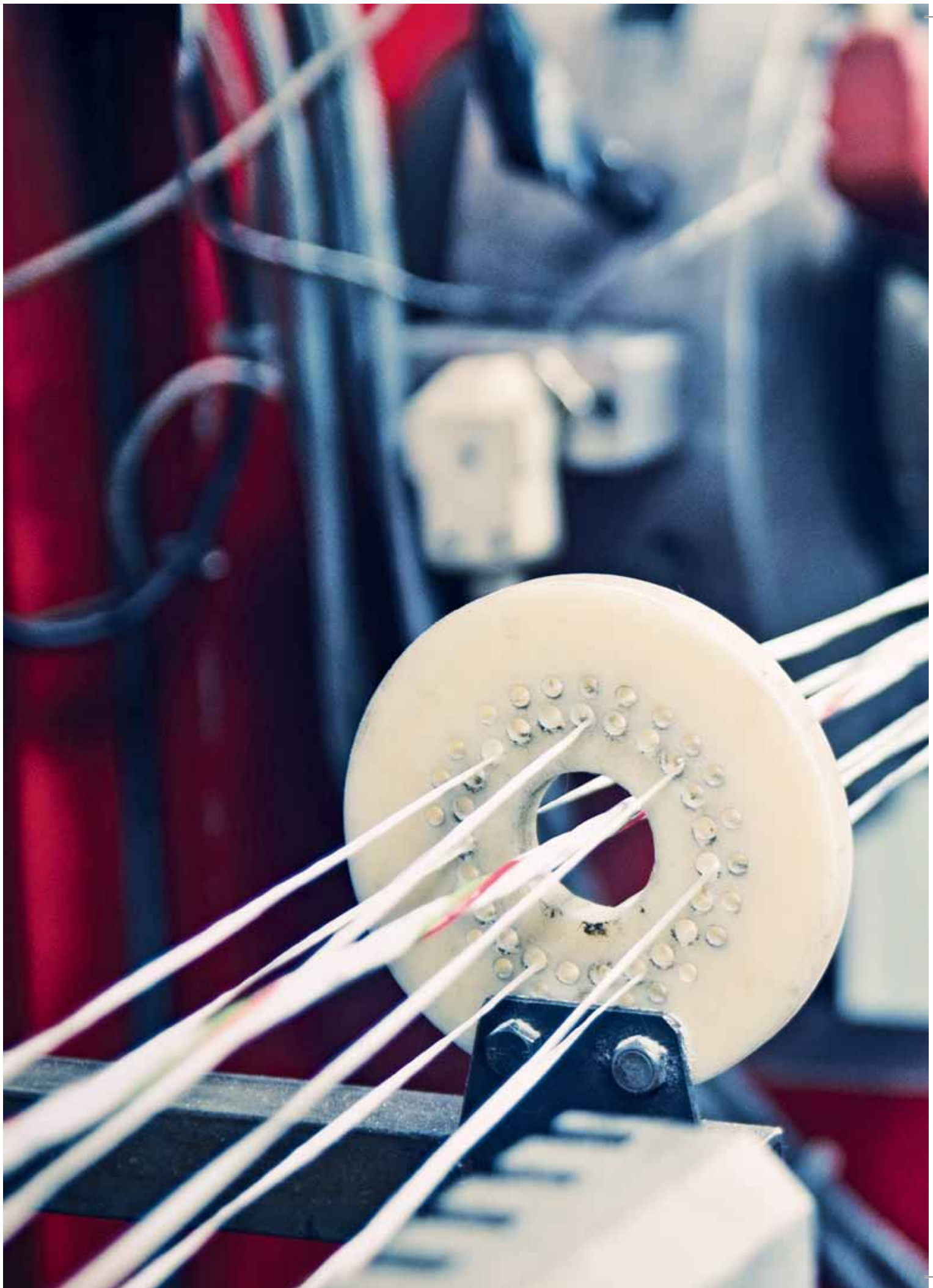
Test		Value	Unit	Method	Comment
Cable outer diameter		22.4 ± 0.5	mm	EN 60811-1-1	
Cable weight	6F	1,083	kg/km		- calculated
	12F	1,080			
	24F	1,081			
	48F	1,083			
	96F	1,100			
Outer jacket thickness		3.0 ± 0.2	mm		
Loose tube diameter	6F	1.8	mm		- stainless steel 1,4301 = ANSI 304
	12F	2.8			
	24F	3.2			
	48F	3.7			
	96F	5.3			
Max. tensile strength		60	kN	EN 60794-1-2-E1	- max. fiber strain 0.6 % - long term 25 kN - no fiber strain for long term load - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - no increase attenuation after the test
Crush resistance test		10	kN	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 50 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (no load)		500	mm	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (load)		600	mm	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Hydrostatic pressure test		300	bar	EN60794-1-22-F10	- duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +80 °C -40 to +80 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for underwater installation.

6

6.8





A photograph of a utility tower with several white aerial cables running across it. A large, semi-transparent blue circle is overlaid on the right side of the image, containing the text. The background is slightly blurred, focusing attention on the cables and the text.

## **7. AERIAL CABLES**

7.1 FIGURE „8“

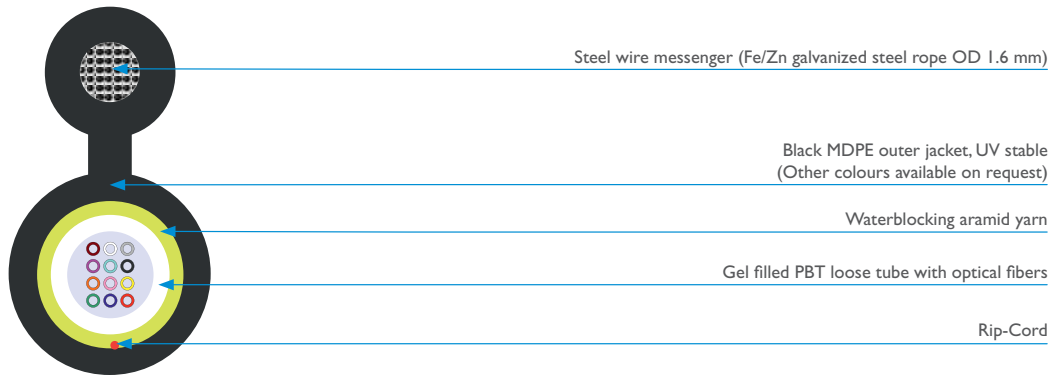
7.2 FLAT

7.3 ADSS

# CLT FIGURE „8“

DIN CODE:A-DQ(ZN)2YT Drop max. 12F

ID:A860



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		7.0 × 11.0 ± 0.5	mm	EN 60811-1-1	
Cable weight		56	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. allowable tension		1,000	N	EN 60794-1-2-E1	- breaking tension 280 N - recommended sag min. 1.5 % span
Crush resistance test		1,000	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

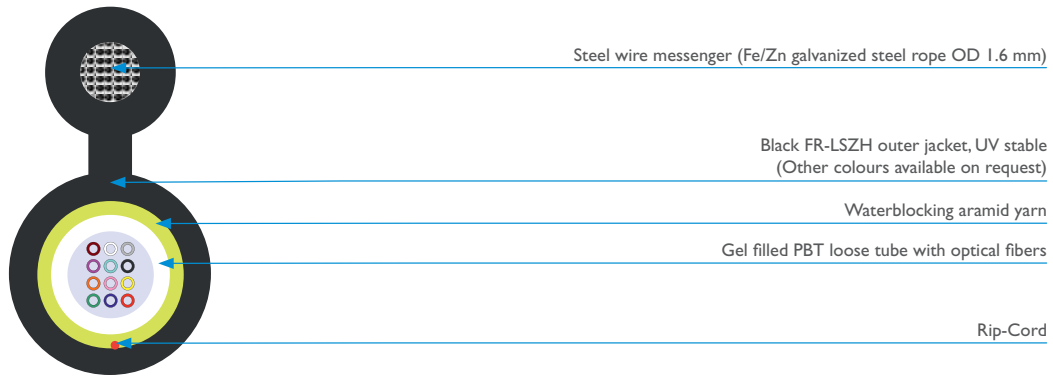
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.



# CLT FIGURE „8“

DIN CODE:A-DQ(ZN)HT Drop max. 12F

ID:A862



## Mechanical and Environmental properties

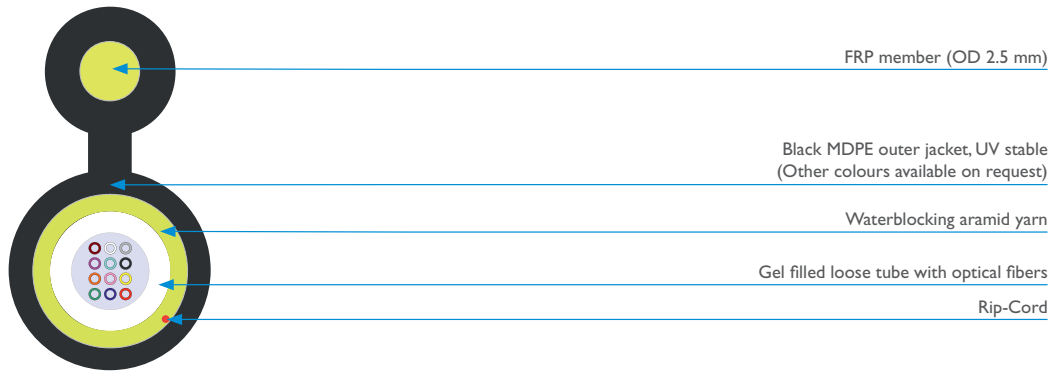
Test		Value	Unit	Method	Comment
Cable outer diameter		7.0 × 11.0 ± 0.5	mm	EN 60811-1-1	
Cable weight		80	kg/km		- calculated
Outer jacket thickness		1.5	mm		
Loose tube diameter		2.3	mm		
Max. allowable tension		1,000	N	EN 60794-1-2-E1	- breaking tension 280 N - recommended sag min. 1.5 % span - plate dimension 100 × 100 mm
Crush resistance test		1,000	N	EN 60794-1-2-E3	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 3 Nm, slightly damaged jacket - impact energy 5 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time in max. temperature 24 hrs - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# CLT FIGURE „8“

DIN CODE: A-DQ(ZN)2YT FRP max. 12F

ID: A870



## Mechanical and Environmental properties

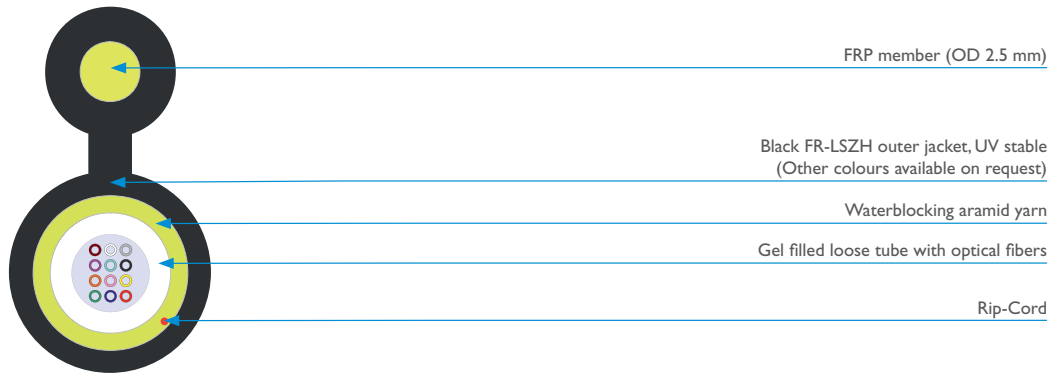
Test		Value	Unit	Method	Comment
Cable outer diameter		6.5 × 11.5 ± 0.5	mm	EN 60811-1-1	
Cable weight		57	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		2.3	mm		
Max. allowable tension		1,000	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test - recommended sag min. 1.5 % span
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm, - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 10 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# CLT FIGURE „8“

DIN CODE: J/A-DQ(ZN)HT FRP max. 12F

ID: A872



## Mechanical and Environmental properties

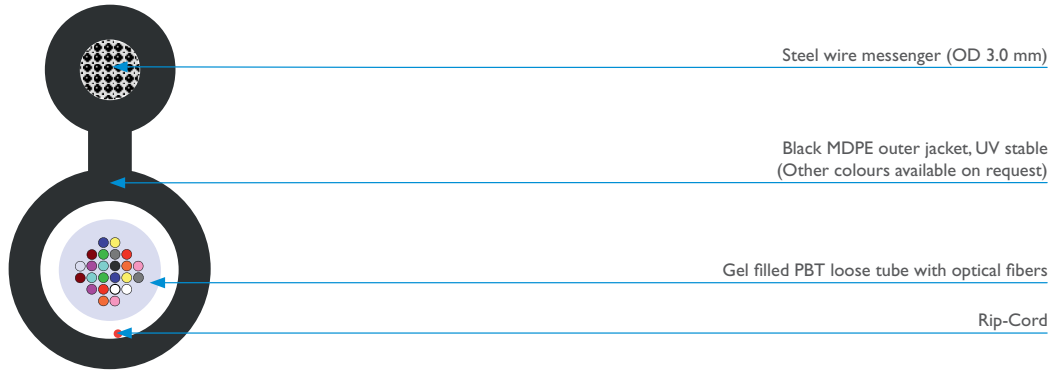
Test		Value	Unit	Method	Comment
Cable outer diameter		6.5 × 11.5 ± 0.5	mm	EN 60811-1-1	
Cable weight		83	kg/km		- calculated
Outer jacket thickness		1.5 ± 0.2	mm		
Loose tube diameter		2.3	mm		
Max. allowable tension		1,000	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - no increase attenuation after the test - recommended sag min. 1.5 % span
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimension 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 10 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1a	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1b	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for indoor or outdoor aerial use.

# CLT FIGURE „8“

DIN CODE:A-D2YT max. 24F

ID: Z187



## Mechanical and Environmental properties

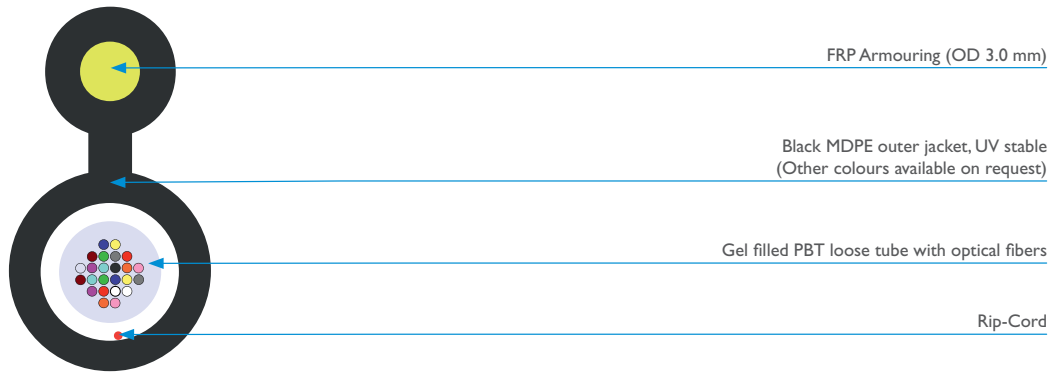
Test		Value	Unit	Method	Comment
Cable outer diameter		8.5 × 17.0 ± 1.0	mm	EN 60811-1-1	
Cable weight		139	kg/km		- calculated
Outer jacket thickness		2.0	mm		
Loose tube diameter		4.5	mm		
Recommended installation sag		1.5	%		
Recommended span		60	m		
Max. tensile tension		3,000	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 10 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# CLT FIGURE „8“

DIN CODE: A-D2YT FRP max. 24F

ID: Z242



## Mechanical and Environmental properties

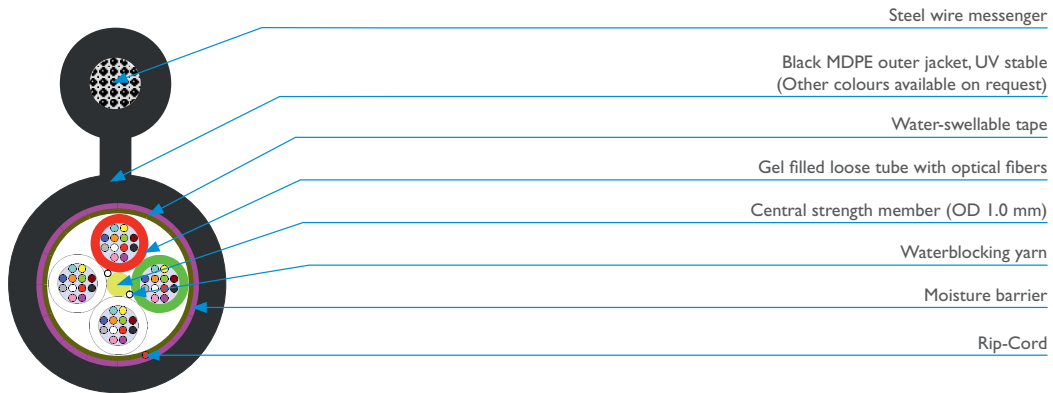
Test		Value	Unit	Method	Comment
Cable outer diameter		8.5 × 17.0 ± 1.0	mm	EN 60811-1-1	
Cable weight		110	kg/km		- calculated
Outer jacket thickness		2.0	mm		
Loose tube diameter		4.5	mm		
Recommended installation sag		1.5	%		
Recommended span		40	m		
Max. tensile strength		3,000	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Crush resistance test		2,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 15 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 5 Nm, slightly damaged jacket - impact energy 10 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm - no increase attenuation after the test
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 Ib	- no increase attenuation after the test
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -30 to +70 °C -30 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# MLT FIGURE „8“

DIN CODE:A-DQ(L)2YT 4× 2.3 max. 48F

ID: L83A



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	5,000 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation	*F1	-15 °C to +50 °C
	Operation		-40 °C to +70 °C
	Storage		-40 °C to +70 °C
Cable informative nominal weight (calc.)			162 kg/km
Standard put-up length			2,000 m
Packaging			Solid wooden drum
Loose tube diameter			2.3 mm
Outer jacket thickness			1.8 ± 0.3 mm
Cable outer diameter			10.1 ± 0.5 × 19.7 ± 1.0 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# MLT FIGURE „8“

DIN CODE:A-DQ(L)2YT FRP 4× 2.3 max. 48F

ID: L87A



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	2,500 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	*F1	-15 °C to +50 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)	Installation Operation Storage	-40 °C to +70 °C
Standard put-up length		133 kg/km
Packaging		2,000 m
Loose tube diameter		Solid wooden drum
Outer jacket thickness		2.3 mm
Cable outer diameter		1.8 ± 0.3 mm
		10.1 ± 0.5 × 19.7 ± 1.0 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

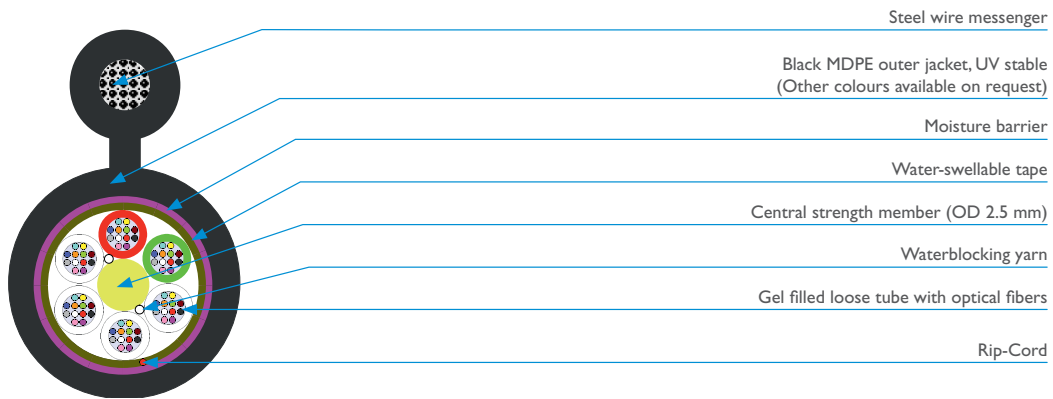
Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# MLT FIGURE „8“

DIN CODE:A-DQ(L)2YT 6× 2.3 max. 72F

ID: F83A



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	5,000 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)			192 kg/km
Standard put-up length			2,000 m
Packaging			Solid wooden drum
Loose tube diameter			2.3 mm
Outer jacket thickness			1.8 ± 0.3 mm
Cable outer diameter			11.6 ± 0.5 × 21.2 ± 1.0 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.



# MLT FIGURE „8“

DIN CODE:A-DQ(L)2YT FRP 6× 2.3 max. 72F

ID: F87A



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1 a	2,500 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11 a	15× cable diameter (no load)
	*E11 b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		162 kg/km
Standard put-up length		2,000 m
Packaging		Solid wooden drum
Loose tube diameter		2.3 mm
Outer jacket thickness		1.8 ± 0.3 mm
Cable outer diameter		11.6 ± 0.5 × 21.2 ± 1.0 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

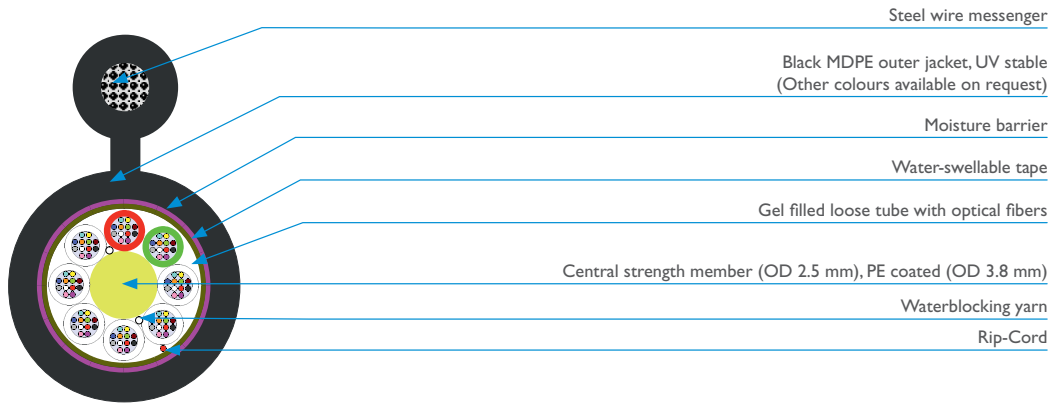
Note:When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years.This cable is suitable for outdoor aerial use.

# MLT FIGURE „8“

DIN CODE:A-DQ(L)2YT 8× 2.3 max. 96F

ID: G83A



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	5,000 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)			219 kg/km
Standard put-up length			2,000 m
Packaging			Solid wooden drum
Loose tube diameter			2.3 mm
Outer jacket thickness			1.8 ± 0.3 mm
Cable outer diameter			12.9 ± 0.5 × 22.5 ± 1.0 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

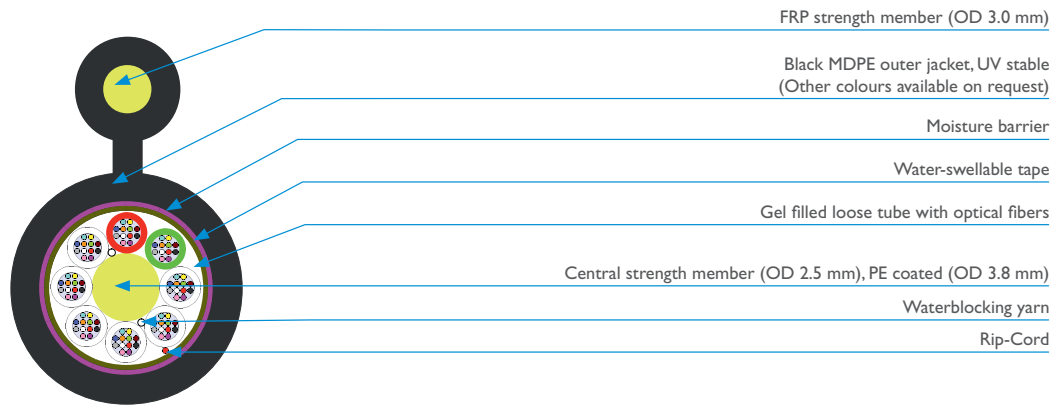
Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# MLT FIGURE „8“

DIN CODE:A-DQ(L)2YT FRP 8× 2.3 max. 96F

ID: G87A



## Mechanical and Environmental properties

Test	Method	Value/Unit	
Max. tensile strength	*E1a	2,500 N	
Crush resistance	*E3	2,000 N/10 cm	
Impact resistance	*E4	3 impacts (w/20 Nm)	
Min. bend radius	*E11a	15× cable diameter (no load)	
	*E11b	20× cable diameter (load)	
Moisture resistance	*F5	passed	
Compound flow	*E14	30 cm/24 hrs/70 °C passed	
Temperature range	Installation Operation Storage	-15 °C to +50 °C	
		*F1	-40 °C to +70 °C
			-40 °C to +70 °C
Cable informative nominal weight (calc.)		188 kg/km	
Standard put-up length		2,000 m	
Packaging		Solid wooden drum	
Loose tube diameter		2.3 mm	
Outer jacket thickness		1.8 ± 0.3 mm	
Cable outer diameter		12.9 ± 0.5 × 22.5 ± 1.0 mm (measured acc. to EN 60811-1-1)	

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# MLT FIGURE „8“

DIN CODE:A-DQ(L)2YT 12× 2.3 max. 144F

ID:H83A



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	5,000 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)			285 kg/km
Standard put-up length			2,000 m
Packaging			Solid wooden drum
Loose tube diameter			2.3 mm
Outer jacket thickness			1.8 ± 0.3 mm
Cable outer diameter			15.8 ± 0.5 × 25.4 ± 1.0 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

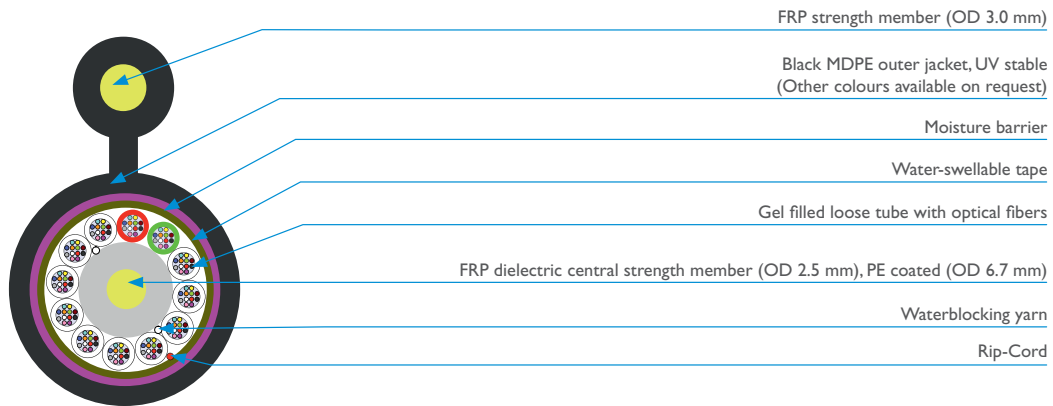
Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# MLT FIGURE „8“

DIN CODE:A-DQ(L)2YT FRP 12× 2.3 max. 144F

ID: H87A



## Mechanical and Environmental properties

Test	Method	Value/Unit
Max. tensile strength	*E1a	2,500 N
Crush resistance	*E3	2,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		254 kg/km
Standard put-up length		2,000 m
Packaging		Solid wooden drum
Loose tube diameter		2.3 mm
Outer jacket thickness		1.8 ± 0.3 mm
Cable outer diameter		15.8 ± 0.5 × 25.4 ± 1.0 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

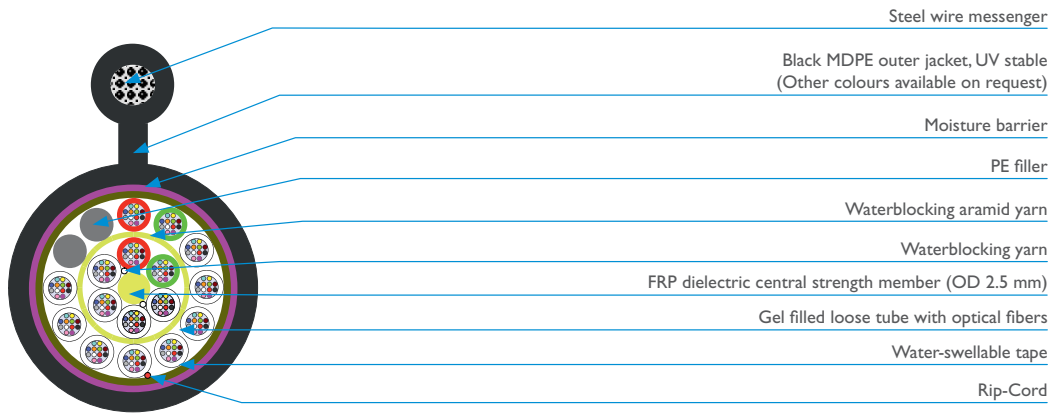
Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# MLT FIGURE „8“

DIN CODE:A-DQ(L)2YT 18× 2.3 max. 216F

ID:183A



The picture represents a cable with 192 fibers.

## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	5,000 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)			292 kg/km
Standard put-up length			2,000 m
Packaging			Solid wooden drum
Loose tube diameter			2.3 mm
Outer jacket thickness			1.8 ± 0.3 mm (tol. -0.5 + 1.0 mm)
Cable outer diameter			16.2 ± 0.5 × 25.8 ± 1.0 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

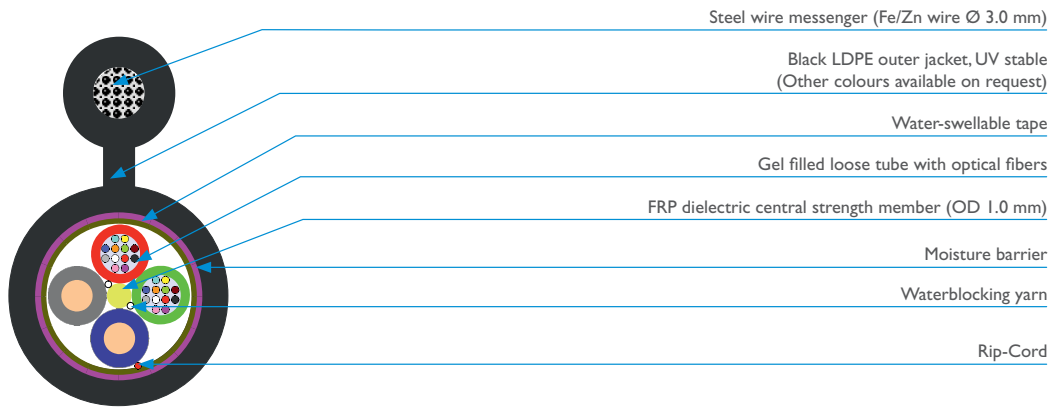
Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# HYBRID MLT FIGURE „8“

DIN CODE:A-DSQ(L)2YT 1× 2.5 + 3× 1Cu (12F) – 3× 2.5 + 1× 1Cu (36F)

ID: Z047



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	5,000 N
Crush resistance		*E3	2,000 N/10 cm
Impact resistance		*E4	3 impacts (w/20 Nm)
Min. bend radius		*E11a	15× cable diameter (no load)
		*E11b	20× cable diameter (load)
Moisture resistance		*F5	passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)		12F	220 kg/km
		24F	208 kg/km
		36F	196 kg/km
Standard put-up length			2,100 m
Packaging			Plywood drum
Loose tube diameter			2.5 mm
Outer jacket thickness			2.0 ± 0.3 mm
Cable outer diameter			11.1 ± 0.5 × 21.1 ± 1.0 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

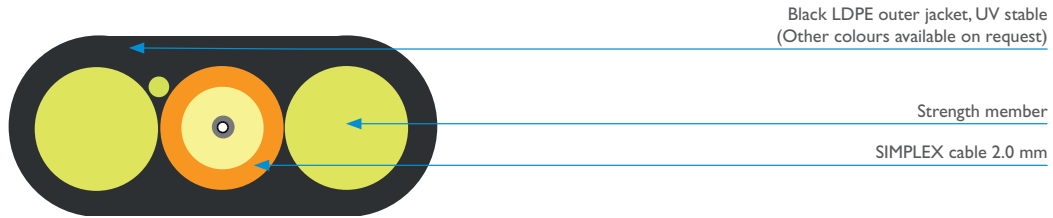
Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

# FLAT

DIN CODE:A-V(2ZN)H2YT max. 1F

ID: Z138



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	1,550 N
Crush resistance		*E3	4,000 N/10 cm
Impact resistance		*E4	3 impacts (w/4 Nm)
Min. bend radius		*E11a	80 mm
		*E11b	120 mm
Repeat bending		*E6	900 cycles (50 mm/0.2 kg)
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)			29 kg/km
Standard put-up length			2,100 m
Packaging			Plywood drum
Loose tube diameter			2.0 mm
Outer jacket thickness			0.9 mm (min. 0.8 mm)
Cable outer diameter			7.7 ± 0.3 × 3.8 ± 0.5 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use or direct burial to sand bed, inner subunit possible for indoor use.

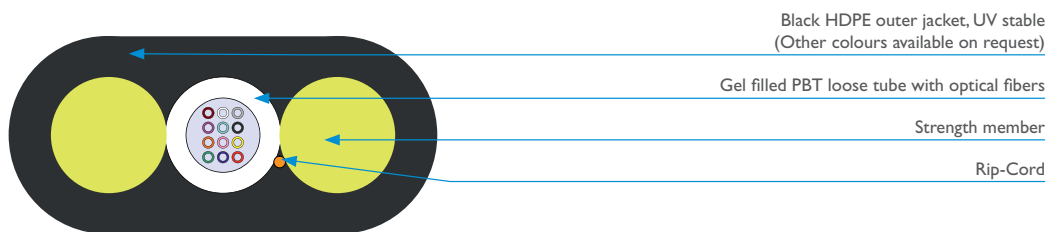
More on page No. 326.



# FLAT

DIN CODE:A-D(2ZN)2YT HD 1 × 2.0 max. 12F

ID: AS01



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		7.7 × 3.8	mm	EN 60811-1-1	
Cable weight		36	kg/km		- calculated
Outer jacket thickness		1.1	mm		
Loose tube diameter		2.0	mm		
Thermal expansion coefficient		15.5	ppm/K		
Modulus of elasticity		16.0	Gpa		
Max. allowable tension ODWAC Clamp		2,400	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.5 dB at 1,550 nm - recommended sag min. 1.5 % span
Max. allowable tension HYPOCLAMP Clamp		1,600	N	EN 60794-1-2-E1	- max. attenuation variation ≤ 0.5 dB at 1,550 nm - recommended sag min. 1.5 % span
Vibration Test		300	Hours	Tested by Telenco	- max. attenuation variation 0.2 dB - NO damages of the cable - NO slipping into the clamps
Crush resistance test		4,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 15 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		120	mm	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Min. bend radius (load)		160	mm	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.2 dB at 1,550 nm
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

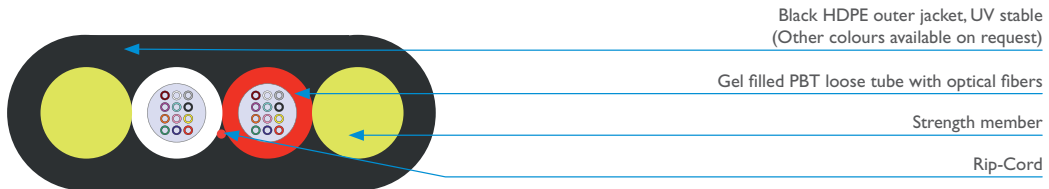
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use or direct burial to sand bed.

More on page No. 326.

# FLAT

DIN CODE: A-D(2ZN)2YT HD 2× 12

ID: Z159



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	1,300 N
Crush resistance		*E3	4,000 N/10 cm
Impact resistance		*E4	3 impacts (w/8 Nm)
Min. bend radius		*E11a	100 mm
		*E11b	140 mm
Moisture resistance			passed
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Modulus			9.42 GPa
Thermal expansion coefficient			11.6 ppm/K
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C -40 °C to +70 °C -40 °C to +70 °C
Cable informative nominal weight (calc.)			39 kg/km
Standard put-up length			2,100 m; 4,100 m (± 5 %)
Packaging			Plywood drum
Loose tube diameter			1.7 mm
Outer jacket thickness			1.0 ± 0.2 mm
Cable outer diameter			9.1 (max. 9.4) × 3.8 (max. 4.4) mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

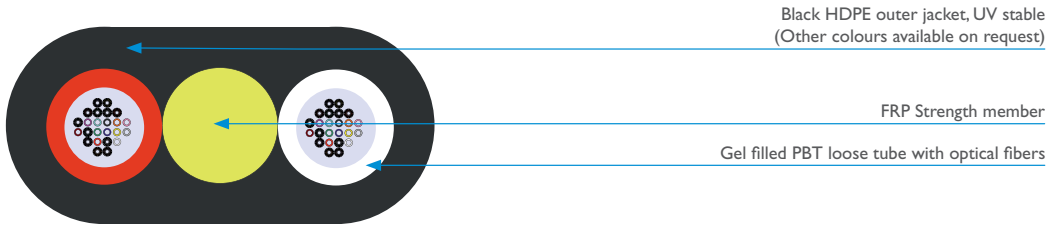
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use or direct burial to sand bed.

More on page No. 327.

# FLAT

DIN CODE:A-D(ZN)2YT HD 2× 3.5 max. 48F

ID: Z194



## Mechanical and Environmental properties

Test		Method	Value/Unit
Max. tensile strength		*E1a	2,500 N
Crush resistance		*E3	2,500 N/10 cm
Impact resistance		*E4	3 impacts (w/30 Nm)
Min. bend radius		*E11	250 mm
Compound flow		*E14	30 cm/24 hrs/70 °C passed
Modulus			2.9 GPa
Thermal expansion coefficient			13.6 ppm/K
Temperature range	Installation Operation Storage	*F1	-15 °C to +50 °C
			-40 °C to +70 °C
Cable informative nominal weight (calc.)			75 kg/km
Standard put-up length			2,100 m ± 5 %
Packaging			Plywood drum
Loose tube diameter			3.5 mm
Outer jacket thickness			1.0 ± 0.2 mm
Cable outer diameter			12.5 ± 0.5 × 5.5 ± 0.3 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

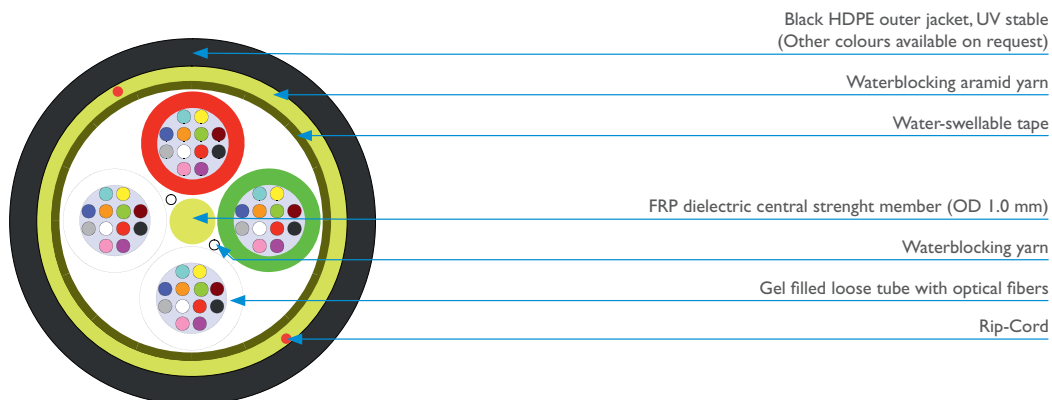
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use or direct burial to sand bed.

More on page No. 327.

# ADSS

DIN CODE: A-DQ(ZN)2Y(T) ADSS 3 kN 4× 2.5 max. 48F

ID: N3XI



## Mechanical and Environmental properties

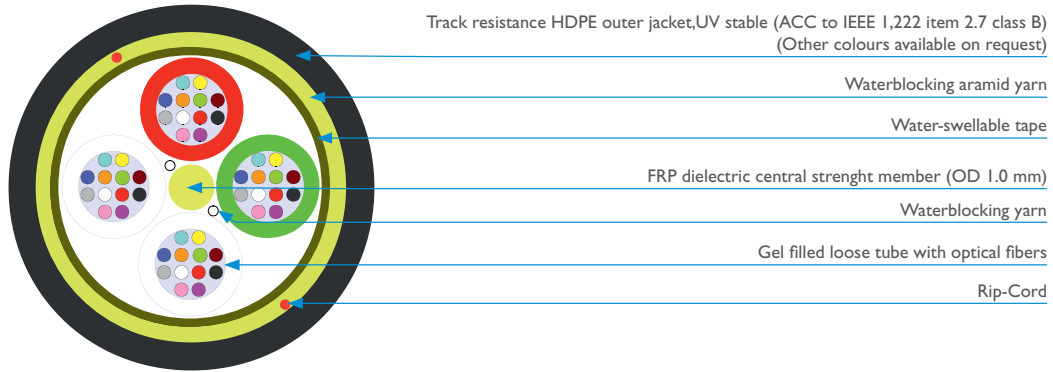
Test		Value	Unit	Method	Comment
Cable outer diameter		10.2 ± 0.5	mm	EN 60811-1-1	
Cable weight		78	kg/km		- calculated
Outer jacket thickness		1.8 ± 0.3	mm		
Loose tube diameter		2.5	mm		
Thermal expansion coefficient		17.9	ppm/K		
Modulus of elasticity		7.2	Gpa		
Max. allowable tension		3	kN	EN 60794-1-2-E1	- max. operation tension 2.6 kN - breaking tension 12 kN - recommended sag min. 1.5 % span
Crush resistance test		3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.  
More on page No. 327.

# ADSS

DIN CODE:A-DQ(ZN)2Y(T) ADSS 3 kN 4× 2.5 max. 48F

ID: N3XT



## Mechanical and Environmental properties

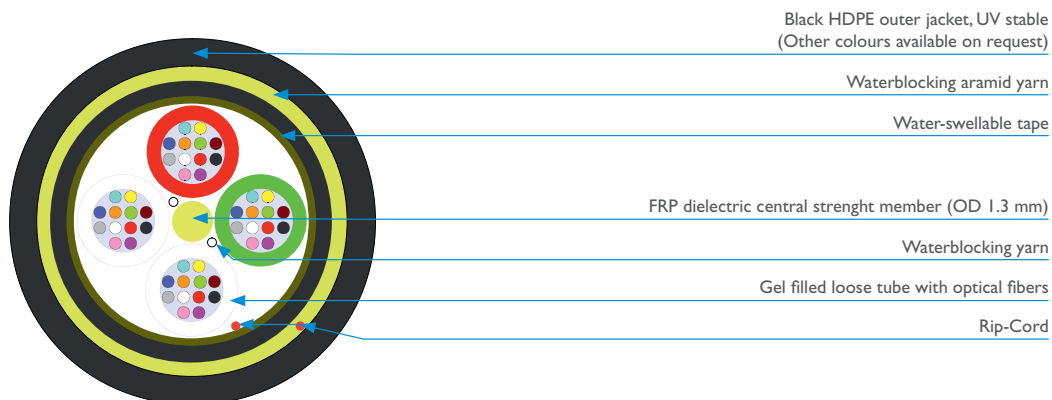
Test	Value	Unit	Method	Comment
Cable outer diameter	10.2 ± 0.5	mm	EN 60811-1-1	
Cable weight	85	kg/km		- calculated
Outer jacket thickness	1.8	mm		
Loose tube diameter	2.5	mm		
Thermal expansion coefficient	17.9	ppm/K		
Modulus of elasticity	7.2	Gpa		
Max. allowable tension	3	kN	EN 60794-1-2-E1	- max. operation tension kN - breaking tension kN
Crush resistance test	3,000	N	EN 60794-1-2-E3	- recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.  
More on page No. 328.

# ADSS

DIN CODE: A-DQ2Y(ZN)2Y(T) ADSS 6 kN 4× 2.5 max. 48F

ID: N3YI



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		12.5 ± 0.5	mm	EN 60811-1-1	
Cable weight		118	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		1.8	mm		
Loose tube diameter		2.8	mm		
Thermal expansion coefficient		17	ppm/K		
Modulus of elasticity		7.53	Gpa		
Max. allowable tension		6	kN	EN 60794-1-2-E1	- max. operation tension 4.9 kN - breaking tension 28 kN
Crush resistance test		3	kN	EN 60794-1-2-E3	- recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

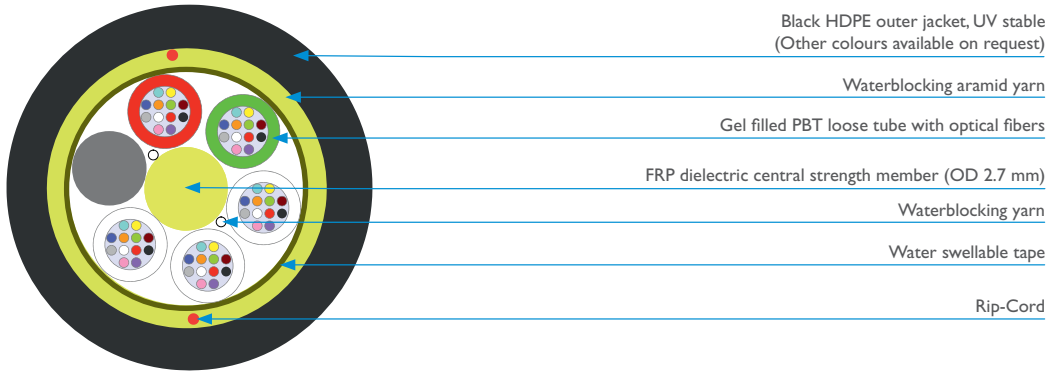
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 328.

# ADSS

DIN CODE:A-DQ(ZN)2Y(T) ADSS 3 kN 6× 2.5 max. 72F

ID: N4XI



The cable represents a cable with 60 fibers.

## Mechanical and Environmental properties

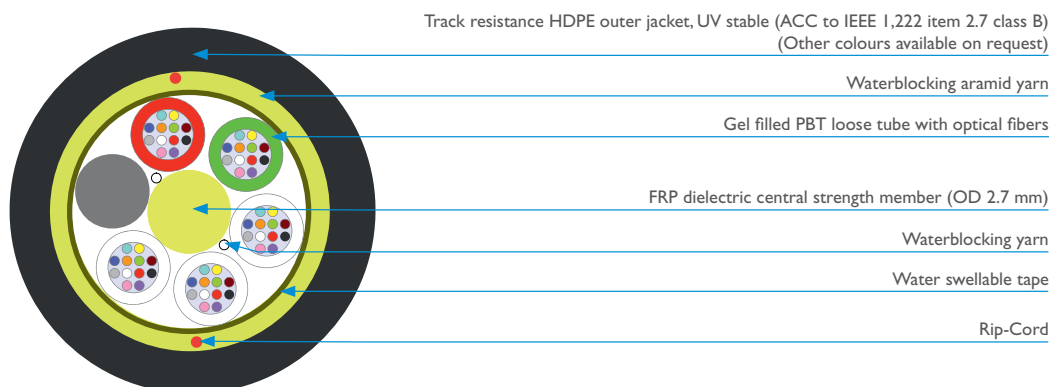
Test		Value	Unit	Method	Comment
Cable outer diameter		11.9 ± 0.5	mm	EN 60811-1-1	
Cable weight		110	kg/km		- calculated
Outer jacket thickness		1.8	mm		
Loose tube diameter		2.5	mm		
Thermal expansion coefficient		15.6	ppm/K		
Modulus of elasticity		10	Gpa		
Max. allowable tension		4	kN	EN 60794-1-2-E1	- max. operation tension 3.5 kN - breaking tension 12 kN - recommended sag min. 1.5 % span
Crush resistance test		3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.  
More on page No. 328.

# ADSS

DIN CODE: A-DQ(ZN)2Y(T) TR ADSS 3 kN 6× 2.5 max. 72F

ID: N4XT



The cable represents a cable with 60 fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	11.9 ± 0.5	mm	EN 60811-1-1	
Cable weight	118	kg/km		- calculated
Outer jacket thickness	1.8	mm		
Loose tube diameter	2.5	mm		
Thermal expansion coefficient	15.6	ppm/K		
Modulus of elasticity	10	Gpa		
Max. allowable tension	4	kN	EN 60794-1-2-E1	- max. operation tension kN - breaking tension kN - recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm
Crush resistance test	3,000	N	EN 60794-1-2-E3	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

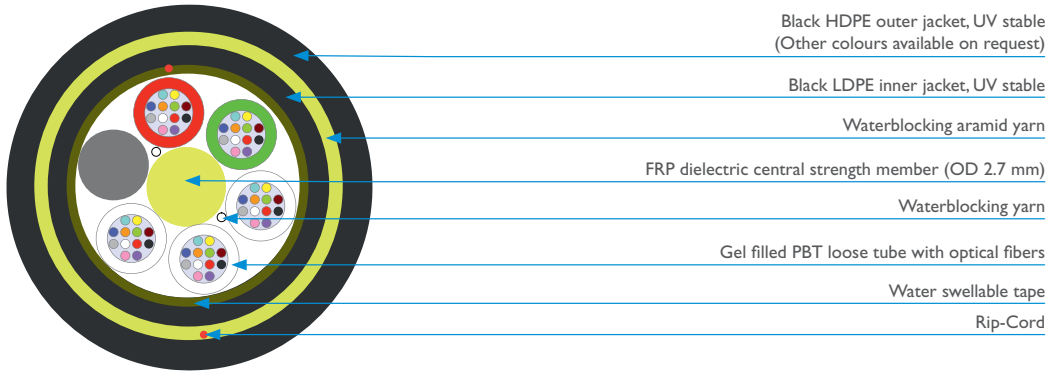
More on page No. 329.



# ADSS

DIN CODE:A-DQ2Y(ZN)2Y(T) ADSS 6 kN 6× 2.5 max. 72F

ID: N4Y1



The picture represents a cable with 60 fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	13.8 ± 0.4	mm	EN 60811-1-1	
Cable weight	153	kg/km		- calculated
Inner jacket thickness	1.0			
Outer jacket thickness	1.8	mm		
Loose tube diameter	2.5	mm		
Thermal expansion coefficient	18.7	ppm/K		
Modulus of elasticity	6.91	Gpa		
Max. allowable tension	6	kN	EN 60794-1-2-E1	- max. operation tension 4.1 kN - breaking tension 15 kN - recommended sag min. 1.5 % span - no increase attenuation after the test
Crush resistance test	3	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without second jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

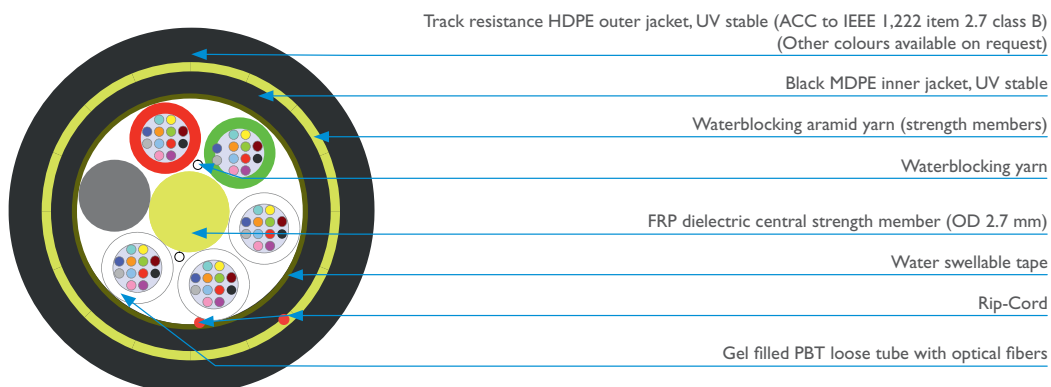
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 329.

# ADSS

DIN CODE: A-DQ2Y(ZN)2Y(T) TR ADSS 6 kN 6× 2.5 max. 72F

ID: N4YT



The picture represents a cable with 60 fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	13.8 ± 0.4	mm	EN 60811-1-1	
Cable weight	153	kg/km		- calculated
Inner jacket thickness	1.0			
Outer jacket thickness	1.8	mm		
Loose tube diameter	2.5	mm		
Thermal expansion coefficient	18.7	ppm/K		
Modulus of elasticity	6.91	Gpa		
Max. allowable tension	6	kN	EN 60794-1-2-E1	- max. operation tension 4.1 kN - breaking tension 15 kN - recommended sag min. 1.5 % span - no increase attenuation after the test
Crush resistance test	3	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without second jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.15 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - no increase attenuation after the test

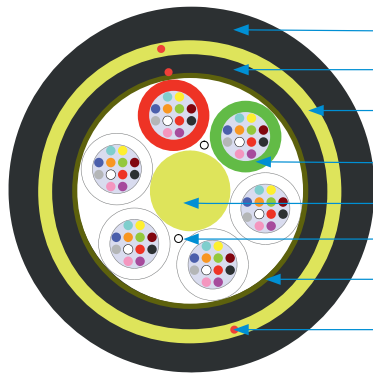
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 329.

# ADSS

DIN CODE:A-DQ2Y(ZN)2Y(T) ADSS 10 kN 6× 2.8 max. 72F

ID: N4ZI



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Black MDPE inner jacket, UV stable

Waterblocking aramid Yarn (strength members)

Gel filled PBT loose tube with optical fibers

FRP dielectric central strength member (OD 3.0 mm)

Waterblocking yarn

Water swellable tape

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		16.7 ± 0.4	mm	EN 60811-1-1	
Cable weight		199	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		2.0	mm		
Loose tube diameter		2.8	mm		
Thermal expansion coefficient		9.5	ppm/K		
Modulus of elasticity		11.4	Gpa		
Max. allowable tension		10	kN	EN 60794-1-2-E1	- max. operation tension 8.6 kN - breaking tension 53 kN - recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm
Crush resistance test		3,000	N	EN 60794-1-2-E3	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11 b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 h before installation

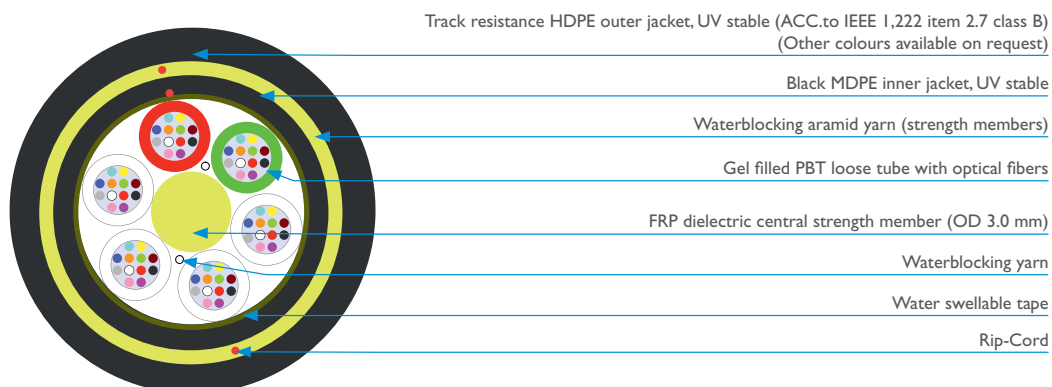
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 330.

# ADSS

DIN CODE: A-DQ2Y(ZN)2Y(T) TR ADSS 10 kN 6× 2.8 max. 72F

ID: N4ZT



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	16.7 ± 0.4	mm	EN 60811-1-1	
Cable weight	213	kg/km		- calculated
Inner jacket thickness	1.0	mm		
Outer jacket thickness	2.0	mm		
Loose tube diameter	2.8	mm		
Thermal expansion coefficient	9.5	ppm/K		
Modulus of elasticity	11.4	Gpa		
Max. allowable tension	10	kN	EN 60794-1-2-E1	- max. operation tension kN - breaking tension kN
Crush resistance test	3,000	N	EN 60794-1-2-E3	- recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 I b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

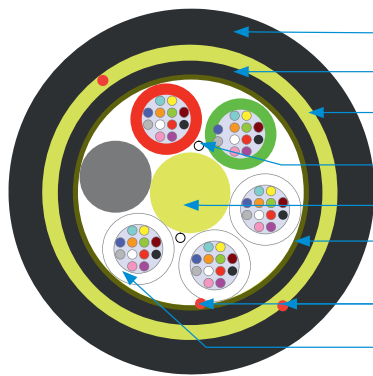
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 330.

# ADSS

DIN CODE:A-DQ2Y(ZN)2Y(T) ADSS 15 kN 6× 2.8 max. 72F

ID: N4RI



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Black MDPE inner jacket, UV stable

Waterblocking aramid yarn

Waterblocking yarn

FRP dielectric central strength member (OD 3.0 mm)

Water swellable tape

Rip-Cord

Gel filled PBT loose tube with optical fibers

The picture represents a cable with 60 fibers.

## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	15.6 ± 0.4	mm	EN 60811-1-1	
Cable weight	201	kg/km		- calculated
Inner jacket thickness	1.0	mm		
Outer jacket thickness	2.0	mm		
Loose tube diameter	2.8	mm		
Thermal expansion coefficient	4.8	ppm/K		
Modulus of elasticity	17.1	Gpa		
Max. allowable tension	18	kN	EN 60794-1-2-E1	- max. operation tension 12.5 kN - breaking tension 61 kN - recommended sag min. 1.5 % span
Crush resistance test	3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 I a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 I b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 h before installation

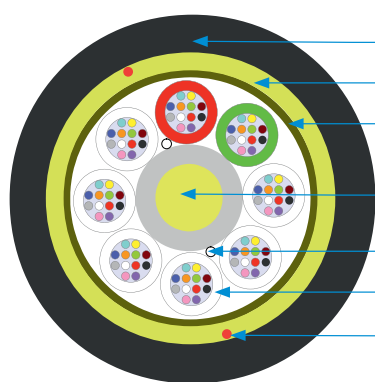
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 331.

# ADSS

DIN CODE:A-DQ(ZN)2Y(T) ADSS 3 kN 8× 2.5 max. 96F

ID: N5XI



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking aramid yarn

Water-swellable tape

FRP dielectric central strength member (OD 2.0 mm), PE coated (OD 4.2 mm)

Waterblocking yarn

Gel filled loose tube with optical fibers

Rip-Cord

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		13.3 ± 0.5	mm	EN 60811-1-1	
Cable weight		132	kg/km		- calculated
Outer jacket thickness		1.8	mm		
Loose tube diameter		2.5	mm		
Thermal expansion coefficient		19.6	ppm/K		
Modulus of elasticity		7.4	Gpa		
Max. allowable tension		3	kN	EN 60794-1-2-E1	- max. operation tension 3.5 kN - breaking tension 12 kN - recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm
Crush resistance test		3,000	N	EN 60794-1-2-E3	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

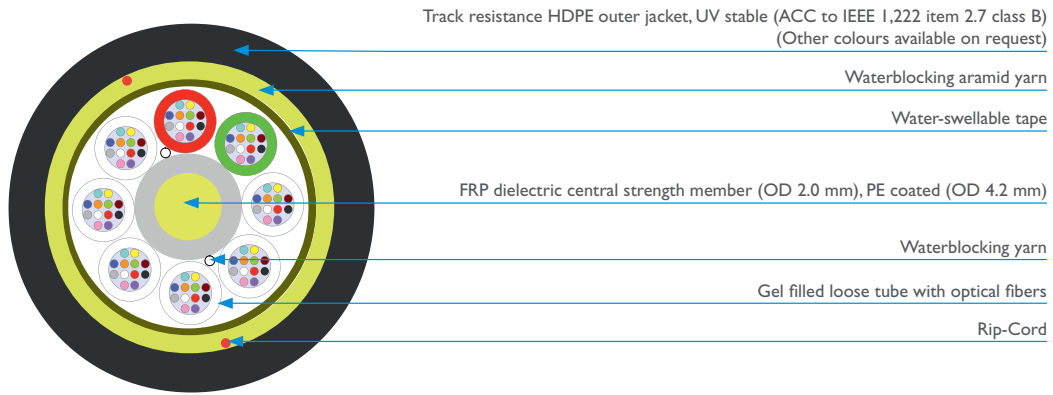
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 332.

# ADSS

DIN CODE:A-DQ(ZN)2Y(T) TR ADSS 3 kN 8× 2.5 max. 96F

ID: N5XT



## Mechanical and Environmental properties

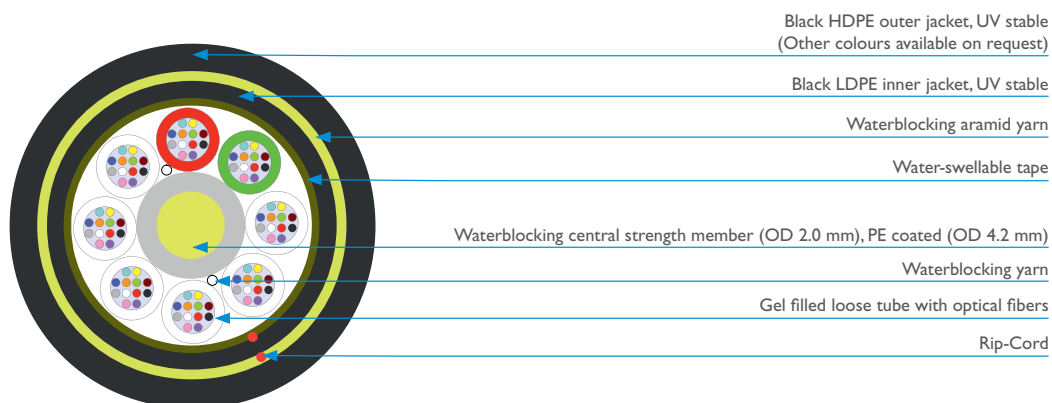
Test	Value	Unit	Method	Comment
Cable outer diameter	13.3 ± 0.5	mm	EN 60811-1-1	
Cable weight	142	kg/km		- calculated
Outer jacket thickness	1.8	mm		
Loose tube diameter	2.5	mm		
Thermal expansion coefficient		ppm/K		
Modulus of elasticity		Gpa		
Max. allowable tension	3	kN	EN 60794-1-2-E1	- max. operation tension kN - breaking tension kN - recommended sag min. 1.5 % span
Crush resistance test	3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test	pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.  
More on page No. 332.

# ADSS

DIN CODE: A-DQ2Y(ZN)2Y(T) ADSS 6 kN 8× 2.5 max. 96F

ID: N5YI



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		15.3 ± 0.4	mm	EN 60811-1-1	
Cable weight		180	kg/km		- calculated
Inner jacket thickness		1.0			
Outer jacket thickness		1.8	mm		
Loose tube diameter		2.5	mm		
Thermal expansion coefficient		26.3	ppm/K		
Modulus of elasticity		4.56	Gpa		
Max. allowable tension		6	kN	EN 60794-1-2-E1	- max. operation tension 4.1 kN - breaking tension 15 kN - recommended sag min. 1.5 % span - no increase attenuation after the test
Crush resistance test		3	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - no increase attenuation after the test
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without second jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - increase attenuation after the test

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

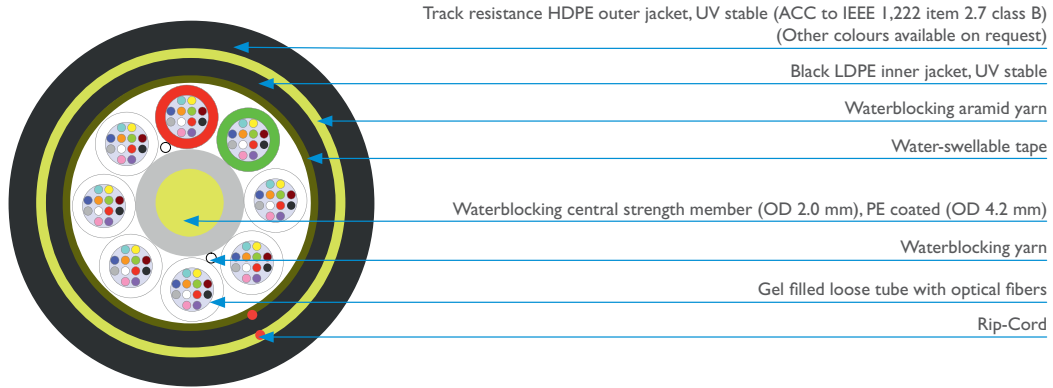
More on page No. 332.



# ADSS

DIN CODE:A-DQ2Y(ZN)2Y(T) TR ADSS 6 kN 8× 2.5 max. 96F

ID: N5YT



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	15.3 ± 0.4	mm	EN 60811-1-1	
Cable weight	180	kg/km		- calculated
Inner jacket thickness	1.0	mm		
Outer jacket thickness	1.8	mm		
Loose tube diameter	2.5	mm		
Thermal expansion coefficient	26.3	ppm/K		
Modulus of elasticity	4.56	Gpa		
Max. allowable tension	6	kN	EN 60794-1-2-E1	- max. operation tension 4.1 kN - breaking tension 15 kN - recommended sag min. 1.5 % span - increase attenuation after the test
Crush resistance test	3	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without second jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - increase attenuation after the test

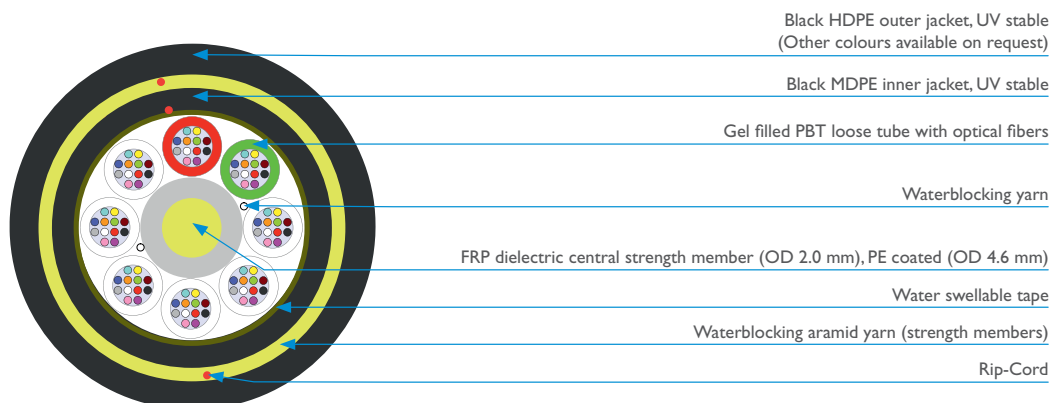
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 333.

# ADSS

DIN CODE: A-DQ2Y(ZN)2Y(T) ADSS 10 kN 8× 2.8 max. 96F

ID: N5ZI

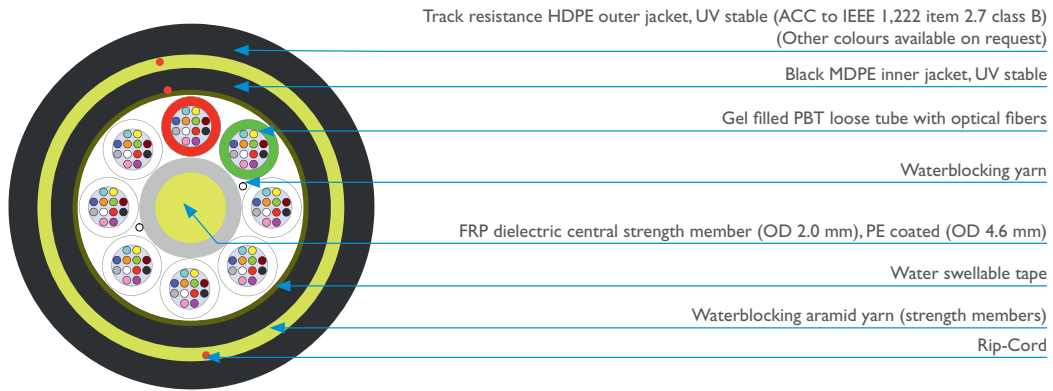


## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		18.0 ± 0.4	mm	EN 60811-1-1	
Cable weight		227	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		2.0	mm		
Loose tube diameter		2.8	mm		
Thermal expansion coefficient		10.9	ppm/K		
Modulus of elasticity		9.2	Gpa		
Max. allowable tension		10	kN	EN 60794-1-2-E1	- max. operation tension 8.6 kN - breaking tension 53 kN
Crush resistance test		3,000	N	EN 60794-1-2-E3	- recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 333.



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		18.0 ± 0.4	mm	EN 60811-1-1	
Cable weight		241	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		2.0	mm		
Loose tube diameter		2.8	mm		
Thermal expansion coefficient		10.9	ppm/K		
Modulus of elasticity		9.2	Gpa		
Max. allowable tension		10	kN	EN 60794-1-2-E1	- max. operation tension kN - breaking tension kN
Crush resistance test		3,000	N	EN 60794-1-2-E3	- recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)		20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

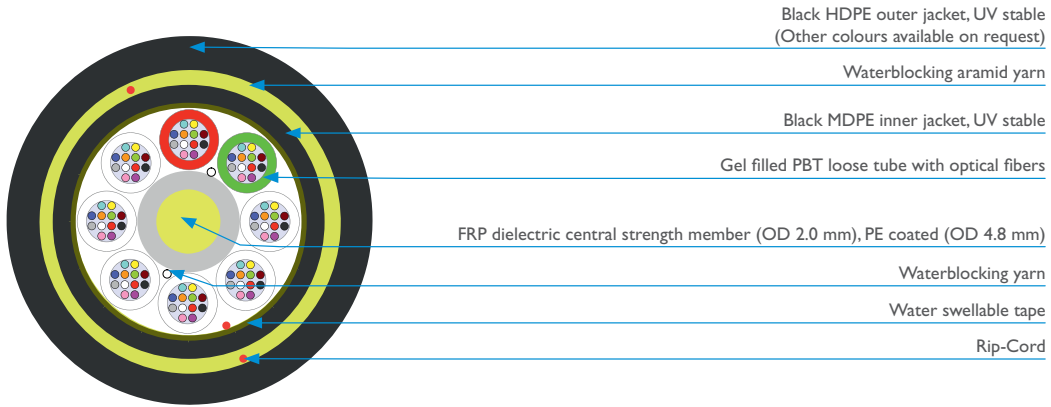
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 334.

# ADSS

DIN CODE: A-DQ2Y(ZN)2Y(T) ADSS 15 kN 8× 2.8 max. 96F

ID: N5RI



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		17.3 ± 0.4	mm	EN 60811-1-1	
Cable weight		237	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		2.0	mm		
Loose tube diameter		2.8	mm		
Thermal expansion coefficient		5.3	ppm/K		
Modulus of elasticity		14.2	Gpa		
Max. allowable tension		18	kN	EN 60794-1-2-E1	- max. operation tension 12.5 kN - breaking tension 61 kN
Crush resistance test		3,000	N	EN 60794-1-2-E3	- recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 60794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

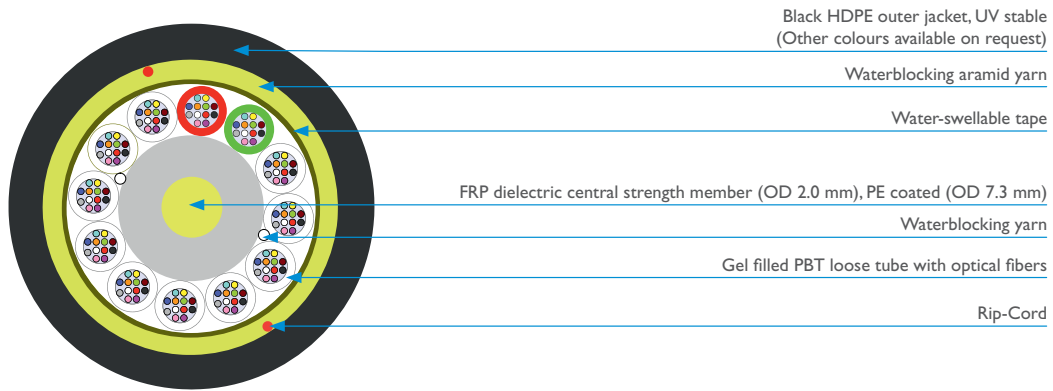
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 335.

# ADSS

DIN CODE:A-DQ(ZN)2Y(T) ADSS 3 kN 12× 2.5 max. 144F

ID: N6XI



## Mechanical and Environmental properties

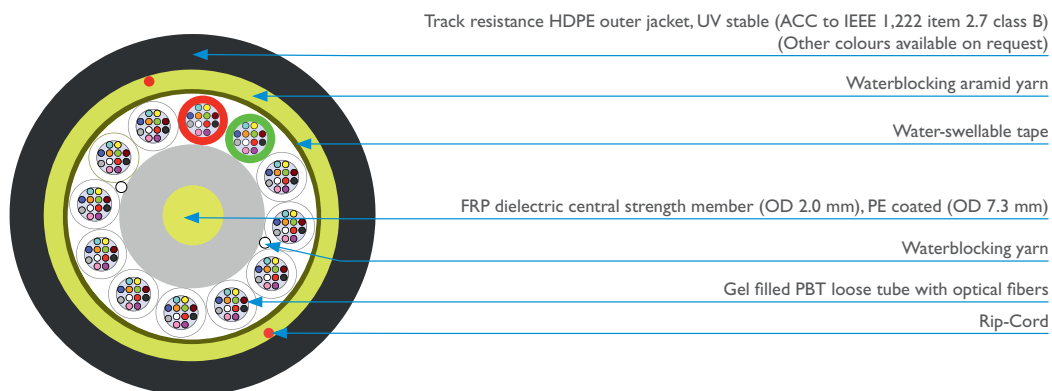
Test		Value	Unit	Method	Comment
Cable outer diameter		16.4 ± 0.5	mm	EN 60811-1-1	
Cable weight		200	kg/km		- calculated
Outer jacket thickness		1.8	mm		
Loose tube diameter		2.5	mm		
Thermal expansion coefficient		24.2	ppm/K		
Modulus of elasticity		6.1	Gpa		
Max. allowable tension		3	kN	EN 60794-1-2-E1	- max. operation tension 3.5 kN - breaking tension 12 kN - recommended sag min. 1.5 % span
Crush resistance test		3,000	N	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.  
More on page No. 334.

# ADSS

DIN CODE:A-DQ(ZN)2Y(T) TR ADSS 3 kN 12× 2.5 max. 144F

ID:N6XT



## Mechanical and Environmental properties

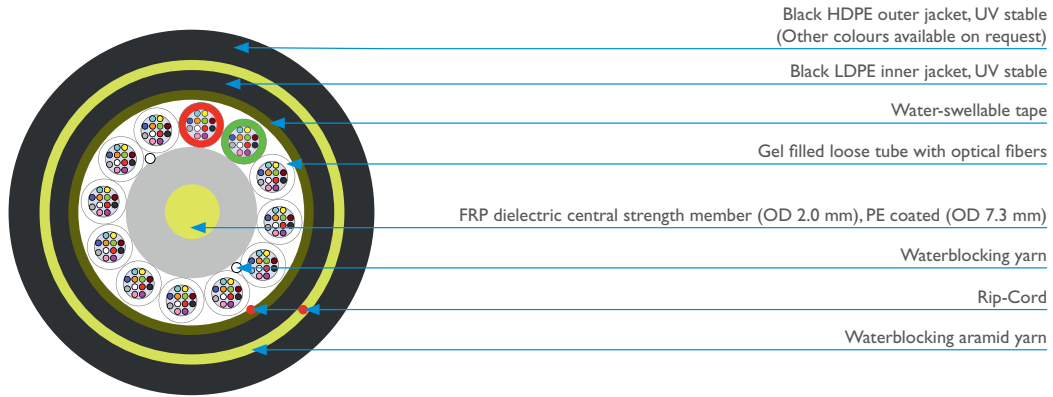
Test		Value	Unit	Method	Comment
Cable outer diameter		16.4 ± 0.5	mm	EN 60811-1-1	
Cable weight		212	kg/km		- calculated
Outer jacket thickness		1.8	mm		
Loose tube diameter			mm		
Thermal expansion coefficient			ppm/K		
Modulus of elasticity		6.1	Gpa		
Max. allowable tension		3	kN	EN 60794-1-2-E1	- max. operation tension kN - breaking tension kN
Crush resistance test		3,000	N	EN 60794-1-2-E3	- recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.  
More on page No. 334.

# ADSS

DIN CODE:A-DQ2Y(ZN)2Y(T) ADSS 6 kN 12× 2.5 max. 144F

ID: N6YI



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	18.4 ± 0.4	mm	EN 60811-1-1	
Cable weight	255	kg/km		- calculated
Inner jacket thickness	1.0	mm		
Outer jacket thickness	1.8	mm		
Loose tube diameter	2.5	mm		
Thermal expansion coefficient	35.9	ppm/K		
Modulus of elasticity	3.39	Gpa		
Max. allowable tension	6	kN	EN 60794-1-2-E1	- max. operation tension 4.1 kN - breaking tension 15 kN - recommended sag min. 1.5 % span - increase attenuation after the test
Crush resistance test	3	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without second jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - increase attenuation after the test

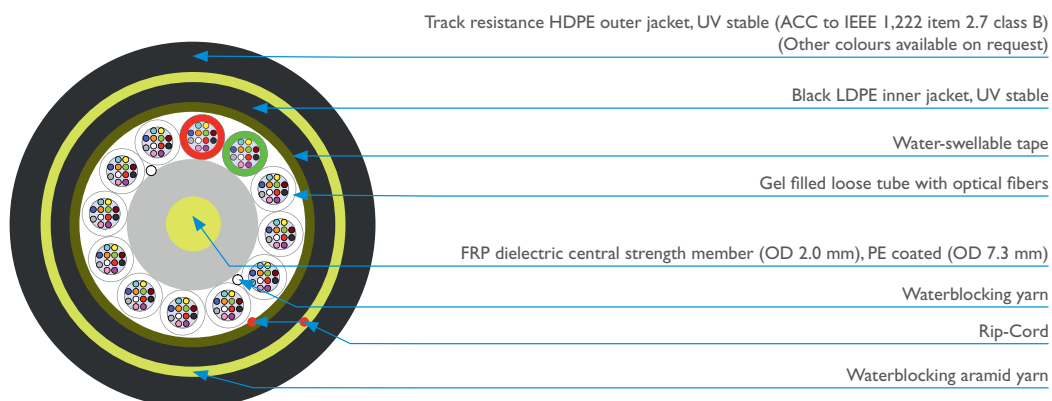
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 336.

# ADSS

DIN CODE: A-DQ2Y(ZN)2Y(T) TR ADSS 6 kN 12× 2.5 max. 144F

ID: N6YT



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	18.4 ± 0.4	mm	EN 60811-1-1	
Cable weight	255	kg/km		- calculated
Inner jacket thickness	1.0	mm		
Outer jacket thickness	1.8	mm		
Loose tube diameter	2.5	mm		
Thermal expansion coefficient	35.9	ppm/K		
Modulus of elasticity	3.39	Gpa		
Max. allowable tension	6	kN	EN 60794-1-2-E1	- max. operation tension 4.1 kN - breaking tension 15 kN - recommended sag min. 1.5 % span - increase attenuation after the test
Crush resistance test	3	kN	EN 60794-1-2-E3	- plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.1 dB at 1,550 nm - duration of loading 1 min. - increase attenuation after the test
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.1 dB at 1,550 nm - increase attenuation after the test
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.1 dB at 1,550 nm
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs - without second jacket
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation - increase attenuation after the test

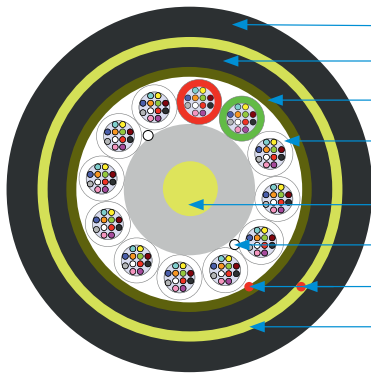
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.  
More on page No. 336.



# ADSS

DIN CODE:A-DQ2Y(ZN)2Y(T) ADSS 10 kN 12× 2.8 max. 144F

ID: N6ZI



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Black MDPE inner jacket, UV stable

Water-swellable tape

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 2.0 mm), PE coated (OD 8.2 mm)

Waterblocking yarn

Rip-Cord

Waterblocking aramid yarn

## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		21.3 ± 0.4	mm	EN 60811-1-1	
Cable weight		315	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		2.0	mm		
Loose tube diameter		2.8	mm		
Thermal expansion coefficient		8.8	ppm/K		
Modulus of elasticity		12.5	Gpa		
Max. allowable tension		10	kN	EN 60794-1-2-E1	- max. operation tension 8.6 kN - breaking tension 53 kN - recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm
Crush resistance test		3,000	N	EN 60794-1-2-E3	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

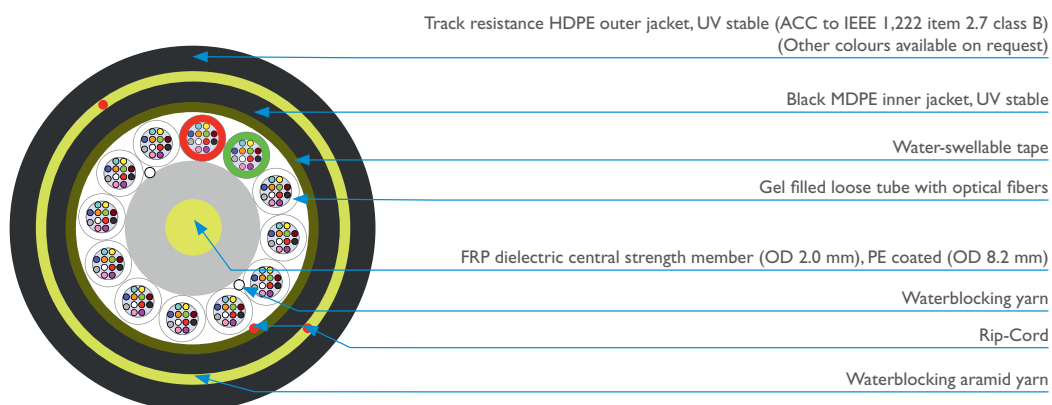
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 336.

# ADSS

DIN CODE: A-DQ2Y(ZN)2Y(T) TR ADSS 10 kN 12× 2.8 max. 144F

ID: N6ZT



## Mechanical and Environmental properties

Test	Value	Unit	Method	Comment
Cable outer diameter	21.3 ± 0.4	mm	EN 60811-1-1	
Cable weight	333	kg/km		- calculated
Inner jacket thickness	1	mm		
Outer jacket thickness	2	mm		
Loose tube diameter	2.8	mm		
Thermal expansion coefficient		ppm/K		
Modulus of elasticity		Gpa		
Max. allowable tension	10	kN	EN 60794-1-2-E1	- max. operation tension kN - breaking tension kN
Crush resistance test	3,000	N	EN 60794-1-2-E3	- recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm - max. attenuation variation ≤ 0.05 dB at 1,550 nm - duration of loading 1 min.
Impact resistance test	3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (no load)	15	× OD	EN 60794-1-2-E1 Ia	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Min. bend radius (load)	20	× OD	EN 60794-1-2-E1 Ib	- max. attenuation variation ≤ 0.05 dB at 1,550 nm
Moisture resistance test	pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C	EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

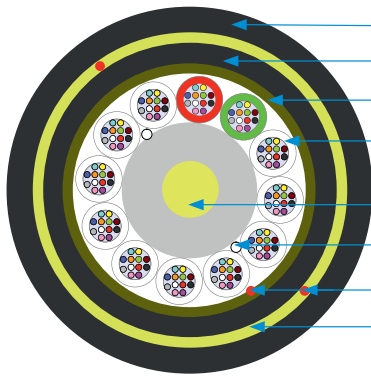
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 337.

# ADSS

DIN CODE:A-DQ2Y(ZN)2Y(T) ADSS 15 kN 12× 2.8 max. 144F

ID: N6RI



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Black MDPE inner jacket, UV stable

Water-swellable tape

Gel filled loose tube with optical fibers

FRP dielectric central strength member (OD 3.0 mm), PE coated (OD 8.5 mm)

Waterblocking yarn

Rip-Cord

Waterblocking aramid yarn

## Mechanical and Environmental properties

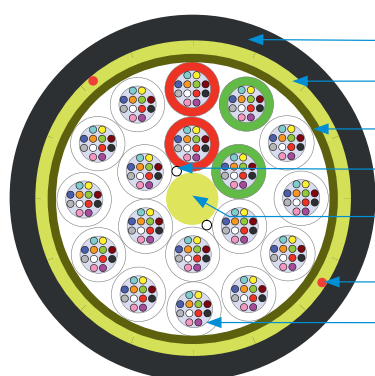
Test		Value	Unit	Method	Comment
Cable outer diameter		20.9 ± 0.5	mm	EN 60811-1-1	
Cable weight		342	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		2.0	mm		
Loose tube diameter		2.8	mm		
Thermal expansion coefficient		7.1	ppm/K		
Modulus of elasticity		12.6	Gpa		
Max. allowable tension		18	kN	EN 60794-1-2-E1	- max. operation tension 12.5 kN - breaking tension 61 kN - recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm
Crush resistance test		3,000	N	EN 60794-1-2-E3	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11 b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature below 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 337.

# ADSS

DIN CODE:A-DQ(ZN)2Y(T) ADSS 15 kN 18× 2.8 max. 216F ID: N7SI



Black HDPE outer jacket, UV stable  
(Other colours available on request)

Waterblocking aramid yarn

Water-swellable tape

Waterblocking yarn

FRP dielectric central strength member (OD 3.0 mm)

Rip-Cord

Gel filled loose tube with optical fibers

## Mechanical and Environmental properties

Test	Method	Value
Max. tensile strength	*E1a	15,000 N
Crush resistance	*E3	3,000 N/10 cm
Impact resistance	*E4	3 impacts (w/20 Nm)
Min. bend radius	*E11a	15× cable diameter (no load)
	*E11b	20× cable diameter (load)
Moisture resistance	*F5	passed
Compound flow	*E14	30 cm/24 hrs/70 °C passed
Temperature range	Installation Operation Storage	-15 °C to +50 °C
		-40 °C to +70 °C
		-40 °C to +70 °C
Cable informative nominal weight (calc.)		293 kg/km
Standard put-up length		2,100 m; 4,100 m
Packaging		Plywood or Solid wooden drum
Loose tube diameter		2.8 mm
Outer jacket thickness		2.0 ± 0.2 mm
Cable outer diameter		19.6 ± 0.4 mm (measured acc. to EN 60811-1-1)

\* IEC 60794-1-2

Note: When installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation.

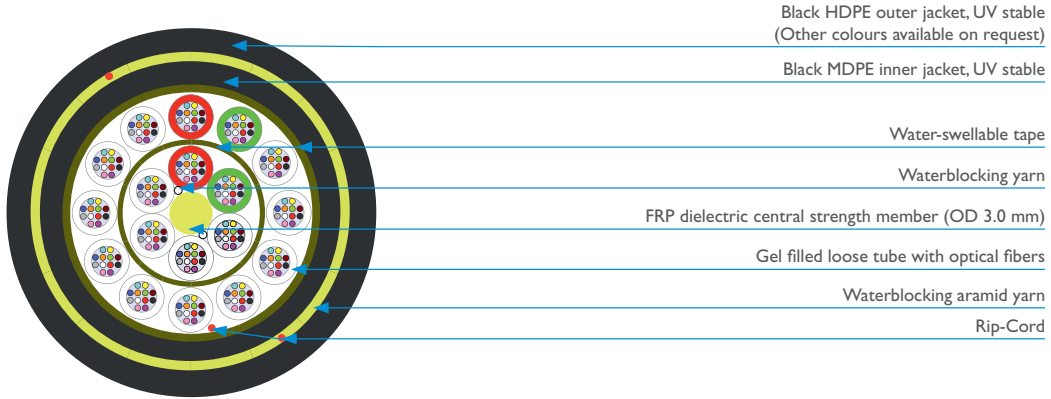
Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 338.

# ADSS

DIN CODE:A-DQ2Y(ZN)2Y(T) ADSS 15 kN 18× 2.8 max. 216F

ID: N7RI



## Mechanical and Environmental properties

Test		Value	Unit	Method	Comment
Cable outer diameter		21.2 ± 0.4	mm	EN 60811-1-1	
Cable weight		343	kg/km		- calculated
Inner jacket thickness		1.0	mm		
Outer jacket thickness		2.0	mm		
Loose tube diameter		2.8	mm		
Thermal expansion coefficient		7.2	ppm/K		
Modulus of elasticity		12.5	Gpa		
Max. allowable tension		18	kN	EN 60794-1-2-E1	- max. operation tension 12.5 kN - breaking tension 61 kN - recommended sag min. 1.5 % span - plate dimensions 100 × 100 mm
Crush resistance test		3,000	N	EN 60794-1-2-E3	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible - duration of loading 1 min.
Impact resistance test		3	Number of impact	EN 60794-1-2-E4	- impact energy 10 Nm, slightly damaged jacket - impact energy 20 Nm, no jacket cracking - max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (no load)		15	× OD	EN 60794-1-2-E11 a	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Min. bend radius (load)		20	× OD	EN 60794-1-2-E11 b	- max. attenuation variation ≤ 0.05 dB at 1,550 nm, reversible
Moisture resistance test		pass		EN 609794-1-22-F5	- water height 1 m - sample length 3 m - no leakage on free sample end - duration of test 24 hrs
Temperature range	Installation Operation Storage	-15 to +50 °C -40 to +70 °C -40 to +70 °C		EN 60794-1-22-F1	- max. attenuation variation ≤ 0.1 dB at 1,550 nm, reversible - dwell time acc. to EN 60794-1-22-F1 - when installing or assembly under temperature bellow 5 °C cable has to be stock in temp of 20 °C at least 24 hrs before installation

Cable life time – minimum 30 years. This cable is suitable for outdoor aerial use.

More on page No. 338.

# AERIAL CABLE PROPERTIES

Z138

Span (m)		Installation (1.5 % Sag)		Wind				Hoarfrost				Wind + Hoarfrost			
		Horiz.	Vert.	50 km/h		100 km/h		10 mm		20 mm		50 km/h + 10 mm		50 km/h + 20 mm	
				Horiz.	Vert.	Horiz.	Vert.	Horiz.	Vert.	Horiz.	Vert.	Horiz.	Vert.	Horiz.	Vert.
20	Force [N]	104		197		511		389		792		477		871	
	Sag [m]	0	0.3	0.32	0.16	0.5	0.06	0	0.45	0	0.6	0.32	0.37	0.29	0.55
40	Force [N]	208		363		875		674		1,325		821		1,445	
	Sag [m]	0	0.6	0.7	0.34	1.16	0.14	0	1.04	0	1.44	0.78	0.85	0.71	1.34
60	Force [N]	316		518		1,183		929				1,116			
	Sag [m]	0	0.9	1.1	0.54	1.04	0.24	0	1.7			1.25	1.42		
80	Force [N]	416		659		1,461		1,151				1,310			
	Sag [m]	0	1.2	1.54	0.76	2.79	0.34	0	2.44			1.8	2.04		
100	Force [N]	520		798				1,324							
	Sag [m]	0	1.5	1.99	0.98			0	3.22						
120	Force [N]	625		931											
	Sag [m]	0	1.8	2.46	1.21										

Other values are available on request.  
 50 km/h = 13.9 m/s = 121 Pa = Beaufort 7  
 100 km/h = 28.7 m/s = 482 Pa = Beaufort 10

AS01

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	127	1.04	0.29	737	0.82	1.0	1,111	0.82	1.36	1,609
60	0.9	184	1.69	0.5	957	1.36	1.66	1,471	1.38	2.3	2,331
80	1.2	243	2.43	0.73	1,180	1.98	2.41	1,806			
100	1.5	304	3.22	0.96	1,395	2.64	3.22	2,119			
120	1.8	365	4.06	1.21	1,593	3.34	4.07	2,413			
140	2.1	426	4.93	1.47	1,787						
160	2.4	486	5.85	1.75	1,969						
180	2.7	547	6.79	2.03	2,149						

Only for ODWAC Clamp

Z159

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
20	0.3	84	0.47	0.13	478	0.36	0.43	683	0.35	0.59	1,066
30	0.5	114	0.81	0.22	628	0.61	0.74	898	0.6	1.01	1,419
40	0.6	169	1.12	0.3	809	0.86	1.05	1,128			
50	0.8	198	1.51	0.4	940	1.16	1.41	1,319			
60	0.9	253	1.86	0.5	1,095						
70	1.1	282	2.29	0.61	1,215						
80	1.2	338	2.68	0.72	1,358						

Z194

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	236	0.6	0.24	1,204	0.53	1.06	1,380	0.44	1.47	2,068
60	0.9	354	1.08	0.4	1,617	0.77	1.79	1,847	0.73	2.50	2,755
80	1.2	472	1.6	0.57	1,999	1.11	2.59	2,277			
100	1.5	590	2.07	0.76	2,350	1.48	3.44	2,678			

N3XI

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	262	1.11	0.32	947	0.83	1.04	1,246	0.83	1.42	1,904
60	0.9	393	1.84	0.52	1,284	1.39	1.73	1,683	1.4	2.39	2,545
80	1.2	524	2.63	0.75	1,594	2.0	2.5	2,079			
100	1.5	655	3.48	0.99	1,887						

### N3XT

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	262	1.11	0.32	947	0.83	1.04	1,246	0.83	1.42	1,904
60	0.9	393	1.84	0.52	1,284	1.39	1.73	1,683	1.4	2.39	2,545
80	1.2	524	2.63	0.75	1,594	2.0	2.5	2,079			
100	1.5	655	3.48	0.99	1,887						

### N3YI

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	602	0.94	0.31	1,618	0.65	0.87	1,929	0.63	1.14	2,835
60	0.9	903	1.53	0.51	2,241	1.06	1.42	2,651	1.05	1.9	3,830
80	1.2	1,204	2.17	0.72	2,803	1.51	2.03	3,300	1.51	2.74	4,728
100	1.5	1,506	2.86	0.95	3,334	1.99	2.68	3,910			
120	1.8	1,807	3.57	1.18	3,846	2.5	3.36	4,491			
140	2.1	2,108	4.31	1.43	4,338	3.03	4.07	5,046			
160	2.4	2,409	5.08	1.68	4,810						

### N4XI

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	374	0.97	0.3	1,217	0.71	0.91	1,553	0.7	1.22	2,333
60	0.9	561	1.61	0.5	1,655	1.17	1.51	2,107	1.17	2.05	3,143
80	1.2	748	2.29	0.71	2,074	1.69	2.17	2,606			
100	1.5	935	3.03	0.93	2,455	2.24	2.87	3,079			
120	1.8	1,122	3.79	1.17	2,825						



N4XT

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	374	0.97	0.3	1,217	0.71	0.91	1,553	0.7	1.22	2,333
60	0.9	561	1.61	0.5	1,655	1.17	1.51	2,107	1.17	2.05	3,143
80	1.2	748	2.29	0.71	2,074	1.69	2.17	2,606			
100	1.5	935	3.03	0.93	2,455	2,24	2.87	3,079			
120	1.8	1,122	3.79	1.17	2,825						

N4YI

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	501	0.98	0.32	1,401	0.69	0.91	1,713	0.68	1.21	2,527
60	0.9	752	1.61	0.52	1,924	1.14	1.51	2,328	1.14	2.03	3,400
80	1.2	1,002	2.29	0.74	2,400	1.64	2.16	2,890	1.64	2.94	4,188
100	1.5	1,253	3.02	0.97	2,854	2,16	2.85	3,421			
120	1.8	1,504	3.78	1.22	3,283	2.72	3.59	3,923			
140	2.1	1,754	4.57	1.47	3,699						
160	2.4	2,005	5.38	1.73	4,106						

N4YT

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	501	0.98	0.32	1,401	0.69	0.91	1,713	0.68	1.21	2,527
60	0.9	752	1.61	0.52	1,924	1.14	1.51	2,328	1.14	2.03	3,400
80	1.2	1,002	2.29	0.74	2,400	1.64	2.16	2,890	1.64	2.94	4,188
100	1.5	1,253	3.02	0.97	2,854	2,16	2.85	3,421			
120	1.8	1,504	3.78	1.22	3,283	2.72	3.59	3,923			
140	2.1	1,754	4.57	1.47	3,699						
160	2.4	2,005	5.38	1.73	4,106						

N4ZI

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	659	0.86	0.28	1,919	0.57	0.77	2,267	0.55	1.0	3,343
60	0.9	988	1.39	0.45	2,663	0.94	1.27	3,102	0.91	1.67	4,520
80	1.2	1,317	1.97	0.64	3,342	1.33	1.8	3,892	1.31	2.4	5,600
100	1.5	1,646	2.58	0.84	3,990	1.76	2.37	4,621	1.74	3.18	6,606
120	1.8	1,976	3.22	1.05	4,596	2.2	2.97	5,309	2.19	4.0	7,560
140	2.1	2,305	3.89	1.27	5,187	2.67	3.6	5,971	2.66	4.87	8,462
160	2.4	2,634	4.58	1.5	5,751	3.15	4.25	6,609			
180	2.7	2,963	5.28	1.73	6,312	3.65	4.92	7,233			
200	3.0	3,293	6.02	1.97	6,847	4.16	5.61	7,833			
220	3.3	3,622	6.76	2.21	7,379	4.68	6.3	8,422			
240	3.6	3,951	7.52	2.46	7,896						
260	3.9	4,280	8.29	2.71	8,409						

N4ZT

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	659	0.86	0.28	1,919	0.57	0.77	2,267	0.55	1.0	3,343
60	0.9	988	1.39	0.45	2,663	0.94	1.27	3,102	0.91	1.67	4,520
80	1.2	1,317	1.97	0.64	3,342	1.33	1.8	3,892	1.31	2.4	5,600
100	1.5	1,646	2.58	0.84	3,990	1.76	2.37	4,621	1.74	3.18	6,606
120	1.8	1,976	3.22	1.05	4,596	2.2	2.97	5,309	2.19	4.0	7,560
140	2.1	2,305	3.89	1.27	5,187	2.67	3.6	5,971	2.66	4.87	8,462
160	2.4	2,634	4.58	1.5	5,751	3.15	4.25	6,609			
180	2.7	2,963	5.28	1.73	6,312	3.65	4.92	7,233			
200	3.0	3,293	6.02	1.97	6,847	4.16	5.61	7,833			
220	3.3	3,622	6.76	2.21	7,379	4.68	6.3	8,422			
240	3.6	3,951	7.52	2.46	7,896						
260	3.9	4,280	8.29	2.71	8,409						

N4RI

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	685	0.77	0.27	2,018	0.52	0.71	2,434	0.49	0.91	3,644
60	0.9	1,028	1.25	0.44	2,801	0.85	1.16	3,350	0.81	1.50	4,944
80	1.2	1,371	1.77	0.63	3,525	1.20	1.65	4,206	1.17	2.15	6,141
100	1.5	1,713	2.31	0.82	4,228	1.58	2.17	5,005	1.55	2.86	7,240
120	1.8	2,056	2.88	1.02	4,876	1.97	2.71	5,769	1.95	3.6	8,292
140	2.1	2,399	3.47	1.23	5,521	2.38	3.28	6,498	2.37	4.37	9,295
160	2.4	2,741	4.08	1.45	6,130	2.81	3.87	7,194	2.80	5.17	10,269
180	2.7	3,084	4.71	1.67	6,721	3.25	4.47	7,873	3.26	6.00	11,196
200	3.0	3,427	5.35	1.90	7,306	3.70	5.09	8,549	3.72	6.86	12,111
220	3.3	3,770	6.01	2.13	7,872	4.16	5.73	9,193			
240	3.6	4,112	6.68	2.37	8,433	4.64	6.38	9,821			
260	3.9	4,455	7.36	2.61	8,987	5.12	7.04	10,444			
280	4.2	4,798	8.06	2.85	9,522	5.61	7.72	11,063			
300	4.5	5,140	8.77	3.10	10,052	6.11	8.40	11,664			

Nesc load situations		Light	Medium	Heavy
Ice thickness	(mm)	0	6.5	12.7
Wind pressure	(N/m)	430	191.5	191.5
Extra force	(N/m)	0.7	2.5	4.4

N5XI

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	431	1.05	0.32	1,264	0.75	0.97	1,542	0.74	1.31	2,282
60	0.9	647	1.74	0.52	1,721	1.25	1.61	2,095	1.25	2.2	3,072
80	1.2	862	2.48	0.75	2,152	1.79	2.32	2,597			
100	1.5	1,078	3.27	0.99	2,549	2.38	3.07	3,068			
120	1.8	1,293	4.11	1.24	2,929						

N5XT

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	431	1.05	0.32	1,264	0.75	0.97	1,542	0.74	1.31	2,282
60	0.9	647	1.74	0.52	1,721	1.25	1.61	2,095	1.25	2.2	3,072
80	1.2	862	2.48	0.75	2,152	1.79	2.32	2,597			
100	1.5	1,078	3.27	0.99	2,549	2.38	3.07	3,068			
120	1.8	1,293	4.11	1.24	2,929						

N5YI

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	590	1.06	0.35	1,429	0.74	0.99	1,678	0.73	1.33	2,428
60	0.9	886	1.75	0.57	1,960	1.23	1.64	2,287	1.23	2.23	3,265
80	1.2	1,181	2.49	0.81	2,450	1.75	2.35	2,849	1.78	3.23	4,022
100	1.5	1,476	3.27	1.07	2,918	2.32	3.10	3,374			
120	1.8	1,771	4.09	1.33	3,364	2.90	3.88	3,881			
140	2.1	2,067	4.94	1.61	3,789						
160	2.4	2,362	5.81	1.90	4,215						

N5YT

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	590	1.06	0.35	1,429	0.74	0.99	1,678	0.73	1.33	2,428
60	0.9	886	1.75	0.57	1,960	1.23	1.64	2,287	1.23	2.23	3,265
80	1.2	1,181	2.49	0.81	2,450	1.75	2.35	2,849	1.78	3.23	4,022
100	1.5	1,476	3.27	1.07	2,918	2.32	3.10	3,374			
120	1.8	1,771	4.09	1.33	3,364	2.90	3.88	3,881			
140	2.1	2,067	4.94	1.61	3,789						
160	2.4	2,362	5.81	1.90	4,215						

N5ZI

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	761	0.88	0.29	2,031	0.58	0.8	2,333	0.56	1.05	3,356
60	0.9	1,142	1.44	0.48	2,798	0.96	1.32	3,192	0.94	1.74	4,545
80	1.2	1,560	2.07	0.69	3,557	1.39	1.9	4,038	1.37	2.54	5,703
100	1.5	1,903	2.68	0.9	4,179	1.81	2.47	4,730	1.79	3.32	6,648
120	1.8	2,283	3.35	1.12	4,827	2.26	3.09	5,446	2.25	4.17	7,622
140	2.1	2,664	4.04	1.35	5,447	2.73	3.74	6,135	2.74	5.08	8,532
160	2.4	3,044	4.75	1.59	6,052	3.22	4.41	6,799			
180	2.7	3,425	5.48	1.83	6,642	3.73	5.1	7,438			
200	3.0	3,805	6.23	2.08	7,217	4.25	5.81	8,064			
220	3.3	4,186	7.0	2.34	7,777	4.77	6.53	8,688			
240	3.6	4,566	7.78	2.6	8,332						
260	3.9	4,947	8.57	2.86	8,873						

N5ZT

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	761	0.88	0.29	2,031	0.58	0.8	2,333	0.56	1.05	3,356
60	0.9	1,142	1.44	0.48	2,798	0.96	1.32	3,192	0.94	1.74	4,545
80	1.2	1,560	2.07	0.69	3,557	1.39	1.9	4,038	1.37	2.54	5,703
100	1.5	1,903	2.68	0.9	4,179	1.81	2.47	4,730	1.79	3.32	6,648
120	1.8	2,283	3.35	1.12	4,827	2.26	3.09	5,446	2.25	4.17	7,622
140	2.1	2,664	4.04	1.35	5,447	2.73	3.74	6,135	2.74	5.08	8,532
160	2.4	3,044	4.75	1.59	6,052	3.22	4.41	6,799			
180	2.7	3,425	5.48	1.83	6,642	3.73	5.1	7,438			
200	3.0	3,805	6.23	2.08	7,217	4.25	5.81	8,064			
220	3.3	4,186	7.0	2.34	7,777	4.77	6.53	8,688			
240	3.6	4,566	7.78	2.6	8,332						
260	3.9	4,947	8.57	2.86	8,873						

N6XI

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	685	1.06	0.35	1,573	0.72	0.98	1,812	0.72	1.32	2,577
60	0.9	1,027	1.74	0.58	2,168	1.19	1.62	2,478	1.19	2.2	3,488
80	1.2	1,370	2.47	0.82	2,716	1.7	2.31	3,089			
100	1.5	1,712	3.25	1.07	3,229						

N6XT

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	685	1.06	0.35	1,573	0.72	0.98	1,812	0.72	1.32	2,577
60	0.9	1,027	1.74	0.58	2,168	1.19	1.62	2,478	1.19	2.2	3,488
80	1.2	1,370	2.47	0.82	2,716	1.7	2.31	3,089			
100	1.5	1,712	3.25	1.07	3,229						

N5RI

Span (m)	Instalation		Nesc light			Nesc medium			Nesc heavy		
	sag (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	785	0.80	0.28	2,157	0.53	0.73	2,539	0.5	0.93	3,725
60	0.9	1,177	1.3	0.46	2,991	0.86	1.20	3,477	0.83	1.55	5,054
80	1.2	1,570	1.83	0.65	3,785	1.23	1.70	4,359	1.19	2.23	6,257
100	1.5	1,962	2.39	0.85	4,519	1.61	2.23	5,204	1.58	2.95	7,391
120	1.8	2,355	2.99	1.06	5,216	2.01	2.79	5,994	1.99	3.71	8,476
140	2.1	2,747	3.60	1.28	5,894	2.43	3.38	6,749	2.41	4.50	9,512
160	2.4	3,139	4.23	1.50	6,551	2.86	3.98	7,488	2.86	5.34	10,485
180	2.7	3,532	4.88	1.73	7,189	3.31	4.60	8,193	3.32	6.20	11,447
200	3.0	3,924	5.54	1.96	7,821	3.77	5.24	8,895	3.79	7.08	12,381
220	3.3	4,317	6.22	2.20	8,434	4.24	5.89	9,566			
240	3.6	4,709	6.92	2.45	9,028	4.72	6.56	10,232			
260	3.9	5,101	7.63	2.70	9,615	5.20	7.23	10,894			
280	4.2	5,494	8.34	2.96	10,196	5.70	7.92	11,537			
300	4.5	5,886	9.07	3.21	10,770	6.21	8.83	12,164			

Nesc load situations		Light	Medium	Heavy
Ice thickness	(mm)	0	6.5	12.7
Wind pressure	(N/m)	430	191.5	191.5
Extra force	(N/m)	0.7	2.5	4.4

N6YI

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	830	1.09	0.38	1,670	0.73	1.02	1,880	0.74	1.39	2,597
60	0.9	1,245	1.79	0.63	2,296	1.21	1.69	2,566	1.23	2.30	3,525
80	1.2	1,660	2.54	0.89	2,886	1.73	2.40	3,210	1.77	3.32	4,360
100	1.5	2,075	3.32	1.17	3,450	2.27	3.16	3,821			
120	1.8	2,489	4.13	1.45	3,995	2.83	3.95	4,409			
140	2.1	2,904	4.97	1.74	4,522						

N6YT

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	830	1.09	0.38	1,670	0.73	1.02	1,880	0.74	1.39	2,597
60	0.9	1,245	1.79	0.63	2,296	1.21	1.69	2,566	1.23	2.30	3,525
80	1.2	1,660	2.54	0.89	2,886	1.73	2.40	3,210	1.77	3.32	4,360
100	1.5	2,075	3.32	1.17	3,450	2.27	3.16	3,821			
120	1.8	2,489	4.13	1.45	3,995	2.83	3.95	4,409			
140	2.1	2,904	4.97	1.74	4,522						

N6ZI

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	1,078	0.86	0.32	2,457	0.55	0.79	2,758	0.53	1.02	3,857
60	0.9	1,635	1.39	0.52	3,439	0.89	1.29	3,797	0.87	1.69	5,260
80	1.2	2,155	1.97	0.73	4,312	1.27	1.83	4,757	1.25	2.42	6,539
100	1.5	2,694	2.57	0.96	5,166	1.67	2.41	5,661	1.65	3.2	7,729
120	1.8	3,233	3.21	1.19	5,963	2.08	3.01	6,529	2.08	4.02	8,853
140	2.1	3,772	3.85	1.43	6,756	2.51	3.63	7,379			
160	2.4	4,311	4.53	1.69	7,512	2.95	4.27	8,194			
180	2.7	4,850	5.21	1.94	8,262						
200	3.0	5,388	5.91	2.2	8,991						



N6ZT

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	1,078	0.86	0.32	2,457	0.55	0.79	2,758	0.53	1.02	3,857
60	0.9	1,635	1.39	0.52	3,439	0.89	1.29	3,797	0.87	1.69	5,260
80	1.2	2,155	1.97	0.73	4,312	1.27	1.83	4,757	1.25	2.42	6,539
100	1.5	2,694	2.57	0.96	5,166	1.67	2.41	5,661	1.65	3.2	7,729
120	1.8	3,233	3.21	1.19	5,963	2.08	3.01	6,529	2.08	4.02	8,853
140	2.1	3,772	3.85	1.43	6,756	2.51	3.63	7,379			
160	2.4	4,311	4.53	1.69	7,512	2.95	4.27	8,194			
180	2.7	4,850	5.21	1.94	8,262						
200	3.0	5,388	5.91	2.2	8,991						

N6RI

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	1,143	0.8	0.32	2,601	0.51	0.75	2,920	0.49	0.95	4,143
60	0.9	1,757	1.26	0.51	3,713	0.80	1.20	4,176	0.78	1.53	5,824
80	1.2	2,343	1.77	0.72	4,702	1.14	1.69	5,143	1.12	2.19	7,247
100	1.5	2,929	2.32	0.94	5,615	1.49	2.22	6,263	1.47	2.9	8,578
120	1.8	3,515	2.87	1.17	6,523	1.86	2.76	7,234	1.85	3.64	9,847
140	2.1	4,101	3.46	1.40	7,382	2.24	3.34	8,160	2.25	4.41	11,055
160	2.4	4,686	4.05	1.65	8,232	2.63	3.92	9,080	2.65	5.21	12,227
180	2.7	5,085	4.73	1.92	8,914	3.08	4.58	9,832	3.1	6.1	13,246
200	3.0	5,858	5.29	2.15	9,849	3.45	5.14	10,826			
220	3.3	6,444	5.92	2.41	10,652	3.87	5.76	11,688			
240	3.6	7,030	6.57	2.67	11,427	4.3	6.40	12,524			
260	3.9	7,615	7.23	2.94	12,193						
280	4.2	8,201	7.88	3.20	12,964						
300	4.5	8,787	8.56	3.48	13,709						

Nesc load situations		Light	Medium	Heavy
Ice thickness	(mm)	0	6.5	12.7
Wind pressure	(N/m)	430	191.5	191.5
Extra force	(N/m)	0.7	2.5	4.4

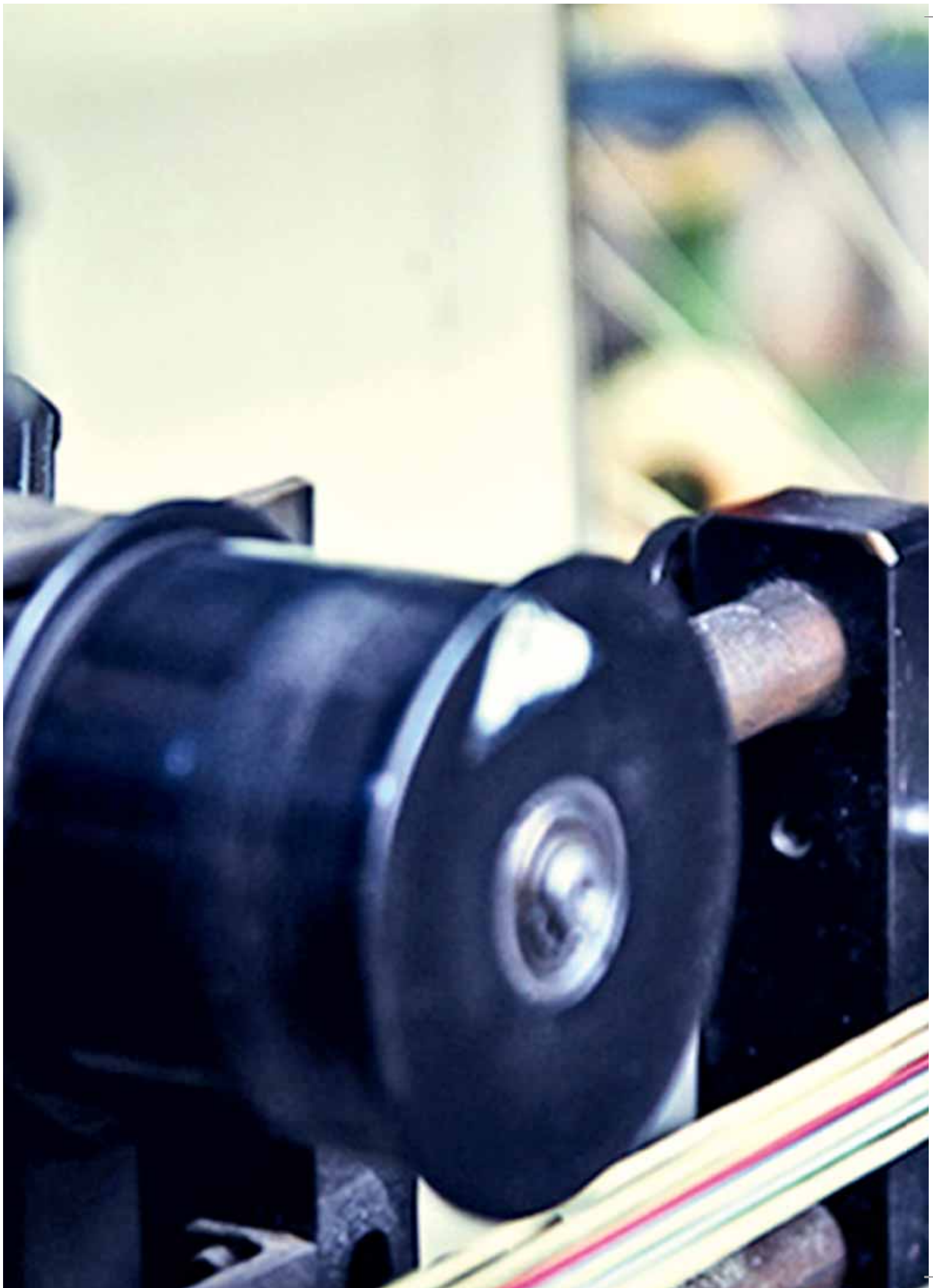
N7SI

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	983	0.79	0.3	2,476	0.51	0.73	2,814	0.48	0.92	4,074
60	0.9	1,474	1.27	0.48	3,443	0.83	1.19	3,889	0.80	1.53	5,517
80	1.2	1,966	1.80	0.67	4,338	1.17	1.67	4,893	1.14	2.19	6,876
100	1.5	2,457	2.35	0.88	5,188	1.54	2.21	5,830	1.51	2.90	8,123
120	1.8	2,949	2.93	1.10	5,993	1.92	2.76	6,724	1.90	3.64	9,314
140	2.1	3,440	3.52	1.32	6,792	2.32	3.33	7,578	2.30	4.41	10,471
160	2.4	3,932	4.14	1.55	7,549	2.73	3.92	8,410	2.73	5.22	11,571
180	2.7	4,423	4.77	1.79	8,299	3.15	4.52	9,237	3.16	6.05	12,637
200	3.0	4,915	5.41	2.03	9,025	3.58	5.15	10,025	3.61	6.91	13,670
220	3.3	5,406	6.07	2.28	9,744	4.02	5.78	10,807	4.07	7.79	14,687
240	3.6	5,898	6.74	2.53	10,439	4.47	6.43	11,568			
260	3.9	6,389	7.41	2.78	11,140	4.93	7.08	12,321			
280	4.2	6,880	8.11	3.04	11,818	5.40	7.76	13,053			
300	4.5	7,372	8.81	3.31	12,488	5.87	8.44	13,779			

N7RI

Span (m)	Installation		Nesc light			Nesc medium			Nesc heavy		
	sag 1.5 % (m)	N	sag (m)		load (N)	sag (m)		load (N)	sag (m)		load (N)
			Horiz.	Vert.		Horiz.	Vert.		Horiz.	Vert.	
40	0.6	1,157	0.79	0.31	2,666	0.5	0.74	3,010	0.48	0.94	4,251
60	0.9	1,736	1.27	0.51	3,724	0.81	1.2	4,161	0.79	1.54	5,812
80	1.2	2,315	1.78	0.71	4,725	1.15	1.7	5,235	1.12	2.2	7,244
100	1.5	2,894	2.33	0.93	5,650	1.5	2.22	6,259	1.48	2.9	8,543
120	1.8	3,472	2.9	1.15	6,548	1.88	2.77	7,214	1.86	3.64	9,859
140	2.1	4,051	3.49	1.38	7,418	2.26	3.34	8,166	2.26	4.42	11,073
160	2.4	4,630	4.1	1.63	8,241	2.66	3.93	9,072	2.67	5.22	12,250
180	2.7	5,208	4.71	1.8	9,075	3.06	4.53	9,953			
200	3.0	5,787	5.34	2.12	9,881	3.48	5.14	10,826			
220	3.3	6,366	5.99	2.38	10,678	3.91	5.77	11,675			
240	3.6	6,945	6.65	2.64	11,449						







## **GENERAL SPECIFICATION**

COLOUR CODE CHARTS

CODING OF FIBER OPTIC CABLES

SPECIFICATIONS AND STANDARDS

CODE TABLE

SHEATH PROPERTIES

CABLE DRUMS

# Colour Code Charts

## IEC 60304 (Standard)





### Tight Buffer

1	2	3	4	5	6	7	8	9	10	11	12
											
red	green	blue	yellow	white	grey	brown	violet	aqua	black	orange	pink
13	14	15	16	17	18	19	20	21	22	23	24
											
red + black strip	green + black strip	blue + black strip	yellow + black strip	white + black strip	grey + black strip	brown + black strip	violet + black strip	aqua + black strip	black + white strip	orange + black strip	pink + black strip

### Loose Tube

1	2	3	4	5	6	7	8	9	10	11	12
											
red	green	blue	yellow	white	grey	brown	violet	aqua	black	orange	pink
13	14	15	16	17	18	19	20	21	22	23	24
											
red + black strip	green + black strip	blue + black strip	yellow + black strip	white + black strip	grey + black strip	brown + black strip	violet + black strip	aqua + black strip	natur + black strip	orange + black strip	pink + black strip

### Multi Loose Tube – Tubes Colour Code
























1	2	3	
			
red	green	natur	white

Note: Different colour sequences available on request.

























# Colour Code Charts

## TIA/EIA 598

### Tight Buffer

1	2	3	4	5	6	7	8	9	10	11	12
											
blue	orange	green	brown	grey	white	red	black	yellow	violet	pink	aqua
13	14	15	16	17	18	19	20	21	22	23	24
											
blue + black strip	orange + black strip	green + black strip	brown + black strip	grey + black strip	white + black strip	red + black strip	black + white strip	yellow + black strip	violet + black strip	pink + black strip	aqua + black strip

### Loose Tube

1	2	3	4	5	6	7	8	9	10	11	12
											
blue	orange	green	brown	grey	white	red	black	yellow	violet	pink	aqua
13	14	15	16	17	18	19	20	21	22	23	24
											
blue + black strip	orange + black strip	green + black strip	brown + black strip	grey + black strip	white + black strip	red + black strip	natur + black strip	yellow + black strip	violet + black strip	pink + black strip	aqua + black strip

### Loose Tube Cables – Sheath Colour

All Cables



black

### Tight Buffer Cables – Sheath Colour

SM E9/125



yellow

G62,5/125 OM1



blue

G50/125 OM2



orange

G50/125 OM3



aqua

G50/125 OM4



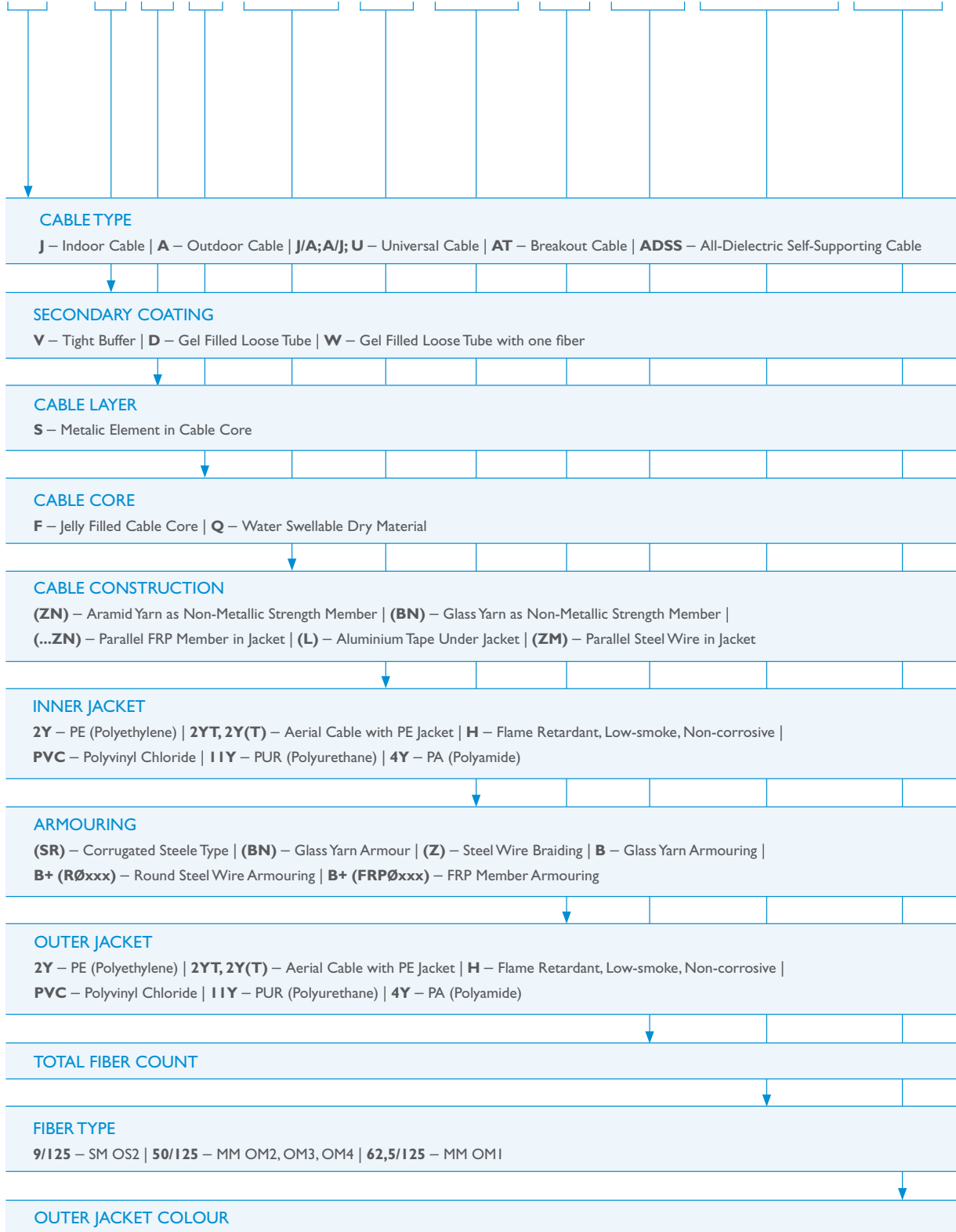
violet

Note: Different sheath colour available on request.

# Coding of Fiber Optic Cables (according to the VDE 08888)

Example:

**A – D S Q (ZN) 2Y (SR) 2Y 144 E9/I25 BLK**





# Single-Mode Fiber ITU-T G.652.D

## OFS AllWave® ZWP Fiber

Cladding Diameter	125.0 ± 0.7 μm
Cladding Non-Circularity	≤ 0.7 %
Core / Cladding Concentricity Error (Offset)	≤ 0.5 μm
Coating Diameter (Uncoloured)	235–245 μm
Coating – Cladding Concentricity Error (Offset)	≤ 12 μm
<b>Attenuation – Loose Tube Cables</b>	
@ 1,310 nm (typical / maximum)	0.31 / 0.35 dB/km
@ 1,550 nm (typical / maximum)	0.20 / 0.24 dB/km
@ 1,625 nm (typical / maximum)	0.21 / 0.26 dB/km
<b>Attenuation – Tight Buffer Cables</b>	
@ 1,310 nm (typical / maximum)	0.30 / 0.35 dB/km
@ 1,550 nm (typical / maximum)	0.25 / 0.30 dB/km
@ 1,625 nm (typical / maximum)	0.35 / 0.40 dB/km
<b>Chromatic Dispersion</b>	
Zero Dispersion Wavelength ( $\lambda_0$ )	1,302–1,322 nm
Zero Dispersion Slope ( $S_0$ )	≤ 0.090 ps/nm <sup>2</sup> km
<b>Group Refractive Index</b>	
@ 1,310 nm	1,467
@ 1,550 nm	1,468
<b>Mode Field Diameter</b>	
@ 1,310 nm	9.2 ± 0.4 μm
@ 1,550 nm	10.4 ± 0.5 μm
Cut-Off Wavelength ( $\lambda_c$ )	≤ 1,260 nm
PMD Individual Fiber	< 0.1 ps/√km
Tensile Proof Test	100 kpsi (0.69 GPa)
Coating Strip Force	1.0 N ≤ CSF ≤ 8.9 N
Macrobending 100 turns, 60 mm, @ 1,550 nm	< 0.05 dB
Macrobending 100 turns, 60 mm, @ 1,625 nm	< 0.05 dB
Macrobending 100 turns, 50 mm, @ 1,310 nm	< 0.05 dB
Macrobending 100 turns, 50 mm, @ 1,550 nm	< 0.05 dB
Macrobending 1 turn, 32 mm, @ 1,550 nm	< 0.05 dB

Values are valid for cabled fiber, local attenuation discontinuity ≤ 0.1 dB.

Note: Due to OTDR measurement uncertainty KDP cannot guarantee attenuation values at fibers shorter than 1,000 m.

# Bend Insensitive Single-Mode Fiber

## ITU-T G.652.D & G.657.A1

### OFS AllWave® Flex Fiber

Cladding Diameter	125.0 ± 0.7 µm
Cladding Non-Circularity	≤ 0.7 %
Core / Cladding Concentricity Error (Offset)	≤ 0.5 µm
Coating Diameter (Uncoloured)	235–245 µm
Coating – Cladding Concentricity Error (Offset)	≤ 12 µm
<b>Attenuation – Loose Tube Cables</b>	
@ 1,310 nm (typical / maximum)	0.31 / 0.35 dB/km
@ 1,550 nm (typical / maximum)	0.20 / 0.24 dB/km
@ 1,625 nm (typical / maximum)	0.21 / 0.26 dB/km
<b>Attenuation – Tight Buffer Cables</b>	
@ 1,310 nm (typical / maximum)	0.30 / 0.35 dB/km
@ 1,550 nm (typical / maximum)	0.25 / 0.30 dB/km
@ 1,625 nm (typical / maximum)	0.35 / 0.40 dB/km
<b>Chromatic Dispersion</b>	
Zero Dispersion Wavelength ( $\lambda_0$ )	1,302–1,322 nm
Zero Dispersion Slope ( $S_0$ )	≤ 0.092 ps/nm <sup>2</sup> km
<b>Group Refractive Index</b>	
@ 1,310 nm	1,467
@ 1,550 nm	1,468
<b>Mode Field Diameter</b>	
@ 1,310 nm	8.5–9.3 µm
@ 1,550 nm	9.4–10.4 µm
Cut-Off Wavelength ( $\lambda_c$ )	≤ 1,260 nm
PMD Individual Fiber	< 0.1 ps/√km
Tensile Proof Test	100 kpsi (0.69 GPa)
Coating Strip Force	1.0 N ≤ CSF ≤ 8.9 N
Macrobending 100 turns, 25 mm, @ 1,550 nm	≤ 0.01 dB
Macrobending 100 turns, 25 mm, @ 1,625 nm	≤ 0.05 dB
Macrobending 10 turns, 15 mm, @ 1,550 nm	≤ 0.2 dB
Macrobending 10 turns, 15 mm, @ 1,625 nm	≤ 0.5 dB
Macrobending 1 turn, 10 mm, @ 1,550 nm	≤ 0.2 dB
Macrobending 1 turn, 10 mm, @ 1,625 nm	≤ 0.5 dB

Values are valid for cabled fiber, local attenuation discontinuity ≤ 0.1 dB.

Note: Due to OTDR measurement uncertainty KDP cannot guarantee attenuation values at fibers shorter than 1,000 m.

# Bend Insensitive Single-Mode Fiber

## ITU-T G.652.D & G.657.A2

### OFS AllWave® Flex+ Fiber

Cladding Diameter	125.0 ± 0.7 μm
Cladding Non-Circularity	≤ 0.7 %
Core / Cladding Concentricity Error (Offset)	≤ 0.5 μm
Coating Diameter (Uncoloured)	235–245 μm
Coating – Cladding Concentricity Error (Offset)	≤ 12 μm
<b>Attenuation – Loose Tube Cables</b>	
@ 1,310 nm (typical / maximum)	0.31 / 0.35 dB/km
@ 1,550 nm (typical / maximum)	0.20 / 0.24 dB/km
@ 1,625 nm (typical / maximum)	0.21 / 0.26 dB/km
<b>Attenuation – Tight Buffer Cables</b>	
@ 1,310 nm (typical / maximum)	0.30 / 0.35 dB/km
@ 1,550 nm (typical / maximum)	0.25 / 0.30 dB/km
@ 1,625 nm (typical / maximum)	0.35 / 0.40 dB/km
<b>Chromatic Dispersion</b>	
Zero Dispersion Wavelength ( $\lambda_0$ )	1,302–1,322 nm
Zero Dispersion Slope ( $S_0$ )	≤ 0.092 ps/nm <sup>2</sup> km
<b>Group Refractive Index</b>	
@ 1,310 nm	1,467
@ 1,550 nm	1,468
<b>Mode Field Diameter</b>	
@ 1,310 nm	8.4–9.2 μm
@ 1,550 nm	9.4–10.4 μm
Cut-Off Wavelength ( $\lambda_c$ )	≤ 1,260 nm
PMD Individual Fiber	< 0.1 ps/√km
Tensile Proof Test	100 kpsi (0.69 GPa)
Coating Strip Force	1.0 N ≤ CSF ≤ 8.9 N
Macrobending 10 turns, 15 mm, @ 1,550 nm	≤ 0.03 dB
Macrobending 10 turns, 15 mm, @ 1,625 nm	≤ 0.1 dB
Macrobending 1 turn, 10 mm, @ 1,550 nm	≤ 0.1 dB
Macrobending 1 turn, 10 mm, @ 1,625 nm	≤ 0.2 dB
Macrobending 1 turn, 7.5 mm, @ 1,550 nm	≤ 0.5 dB
Macrobending 1 turn, 7.5 mm, @ 1,625 nm	≤ 1.0 dB

Values are valid for cabled fiber, local attenuation discontinuity ≤ 0.1 dB.

Note: Due to OTDR measurement uncertainty KDP cannot guarantee attenuation values at fibers shorter than 1,000 m.

# Bend Insensitive Single-Mode Fiber

## ITU-T G.652.D & G.657.B3

### OFS AllWave® Flex Max Fiber

Cladding Diameter	125.0 ± 0.7 µm
Cladding Non-Circularity	≤ 0.7 %
Core / Cladding Concentricity Error (Offset)	≤ 0.5 µm
Coating Diameter (Uncoloured)	242 ± 5 µm
Coating – Cladding Concentricity Error (Offset)	≤ 12 µm
<b>Attenuation – Loose Tube Cables</b>	
@ 1,310 nm (typical / maximum)	0.31 / 0.35 dB/km
@ 1,550 nm (typical / maximum)	0.20 / 0.24 dB/km
@ 1,625 nm (typical / maximum)	0.21 / 0.26 dB/km
<b>Attenuation – Tight Buffer Cables</b>	
@ 1,310 nm (typical / maximum)	0.30 / 0.35 dB/km
@ 1,550 nm (typical / maximum)	0.25 / 0.30 dB/km
@ 1,625 nm (typical / maximum)	0.35 / 0.40 dB/km
<b>Chromatic Dispersion</b>	
Zero Dispersion Wavelength ( $\lambda_0$ )	1,302–1,322 nm
Zero Dispersion Slope ( $S_0$ )	≤ 0.092 ps/nm <sup>2</sup> km
<b>Dispersion</b>	
@ 1,550 nm	≤ 18 ps/nm.km
<b>Group Refractive Index</b>	
@ 1,310 nm	1,467
@ 1,550 nm	1,468
<b>Mode Field Diameter</b>	
@ 1,310 nm	8.3–9.1 µm
@ 1,550 nm	9.2–10.4 µm
Cut-Off Wavelength ( $\lambda_c$ )	≤ 1,260 nm
PMD Individual Fiber	< 0.1 ps/√km
Tensile Proof Test	100 kpsi (0.69 GPa)
Coating Strip Force	1.3 N ≤ CSF ≤ 8.9 N
Macrobending 1 turn, 10 mm, @ 1,550 nm	≤ 0.03 dB
Macrobending 1 turn, 10 mm, @ 1,625 nm	≤ 0.1 dB
Macrobending 1 turn, 7.5 mm, @ 1,550 nm	≤ 0.05 dB
Macrobending 1 turn, 7.5 mm, @ 1,625 nm	≤ 0.15 dB
Macrobending 1 turn, 5 mm, @ 1,550 nm	≤ 0.1 dB
Macrobending 1 turn, 5 mm, @ 1,625 nm	≤ 0.25 dB

Values are valid for cabled fiber, local attenuation discontinuity ≤ 0.1 dB.

Note: Due to OTDR measurement uncertainty KDP cannot guarantee attenuation values at fibers shorter than 1,000 m.

# Single-Mode Fiber ITU-T G.652.D Low Loss

## OFS AllWave® Low Loss Fiber

Cladding Diameter	125.0 ± 0.7 μm
Cladding Non-Circularity	≤ 0.7 %
Core / Cladding Concentricity Error (Offset)	≤ 0.5 μm
Coating Diameter (Uncoloured)	235–245 μm
Coating – Cladding Concentricity Error (Offset)	≤ 12 μm
<b>Attenuation – Loose Tube Cables</b>	
@ 1,310 nm (typical / maximum)	0.30 / 0.33 dB/km
@ 1,550 nm (typical / maximum)	0.19 / 0.22 dB/km
@ 1,625 nm (typical / maximum)	0.20 / 0.23 dB/km
<b>Attenuation – Tight Buffer Cables</b>	
@ 1,310 nm (typical / maximum)	0.30 / 0.35 dB/km
@ 1,550 nm (typical / maximum)	0.22 / 0.28 dB/km
@ 1,625 nm (typical / maximum)	0.30 / 0.35 dB/km
<b>Chromatic Dispersion</b>	
Zero Dispersion Wavelength ( $\lambda_0$ )	1,302–1,322 nm
Zero Dispersion Slope ( $S_0$ )	≤ 0.090 ps/nm <sup>2</sup> km
<b>Group Refractive Index</b>	
@ 1,310 nm	1,467
@ 1,550 nm	1,468
<b>Mode Field Diameter</b>	
@ 1,310 nm	9.2 ± 0.4 μm
@ 1,550 nm	10.4 ± 0.5 μm
Cut-Off Wavelength ( $\lambda_c$ )	≤ 1,260 nm
PMD Individual Fiber	< 0.1 ps/√km
Tensile Proof Test	100 kpsi (0.69 GPa)
Coating Strip Force	1.0 N ≤ CSF ≤ 8.9 N
Macrobending 100 turns, 60 mm, @ 1,550 nm	≤ 0.03 dB
Macrobending 100 turns, 60 mm, @ 1,625 nm	≤ 0.03 dB
Macrobending 100 turns, 50 mm, @ 1,550 nm	≤ 0.03 dB
Macrobending 100 turns, 50 mm, @ 1,625 nm	≤ 0.03 dB
Macrobending 1 turn, 32 mm, @ 1,550 nm	≤ 0.03 dB

Values are valid for cabled fiber, local attenuation discontinuity ≤ 0.1 dB.

Note: Due to OTDR measurement uncertainty KDP cannot guarantee attenuation values at fibers shorter than 1,000 m.

# Single-Mode Fiber ITU-T G.654

## OFS TeraWave™ Fiber

Cladding Diameter	125.0 ± 0.7 μm
Cladding Non-Circularity	≤ 0.7 %
Core / Cladding Concentricity Error (Offset)	≤ 0.5 μm
Coating Diameter (Uncoloured)	242–262 μm
Coating – Cladding Concentricity Error (Offset)	≤ 12 μm
<b>Attenuation – Loose Tube Cables</b>	
@ 1,550 nm maximum	0.22 dB/km
@ 1,625 nm maximum	0.23 dB/km
<b>Chromatic Dispersion</b>	
@ 1,550 nm	≤ 22 ps/nm.km
Zero Dispersion Slope (S0)	≤ 0.070 ps/nm <sup>2</sup> km
<b>Group Refractive Index</b>	
@ 1,550 nm	1,467
<b>Mode Field Diameter</b>	
@ 1,550 nm	12.4 ± 0.5 μm
Cut-Off Wavelength (λ <sub>c</sub> )	≤ 1,520 nm
<b>Effective Area</b>	
@ 1,550 nm	115–135 μm <sup>2</sup>
PMD Individual Fiber	< 0.1 ps/√km
Tensile Proof Test	100 kpsi (0.69 GPa)
Coating Strip Force	1.0 N ≤ CSF ≤ 9.0 N
Macrobending 100 turns, 30 mm, @ 1550 nm	≤ 0.1 dB
Macrobending 100 turns, 30 mm, @ 1625 nm	≤ 0.1 dB

Values are valid for cabled fiber, local attenuation discontinuity ≤ 0.1 dB.

Note: Due to OTDR measurement uncertainty KDP cannot guarantee attenuation values at fibers shorter than 1,000 m.

# Single-Mode Fiber ITU-T G.655 (NZDSF)

## OFS TrueWave® RS LWP Fiber

Cladding Diameter	125.0 ± 0.7 µm
Cladding Non-Circularity	≤ 0.7 %
Core / Cladding Concentricity Error (Offset)	≤ 0.5 µm
Coating Diameter (Coloured)	242 ± 5 µm
Coating – Cladding Concentricity Error (Offset)	≤ 12 µm
<b>Attenuation – Loose Tube Cables</b>	
@ 1,550 nm (typical / maximum)	0.25 / 0.30 dB/km
@ 1,625 nm (typical / maximum)	0.27 / 0.34 dB/km
<b>Attenuation – Tight Buffer Cables</b>	
@ 1,550 nm (typical / maximum)	0.25 / 0.35 dB/km
@ 1,625 nm (typical / maximum)	0.27 / 0.40 dB/km
<b>Chromatic Dispersion</b>	
C-Band 1,530–1,565 nm	2.6–6.0 ps/(nm km)
L-Band 1,565–1,625 nm	4.0–8.9 ps/(nm km)
Dispersion Slope @1,550 nm	≤ 0.05 ps/(nm <sup>2</sup> km)
S – L bands 1,460–1,625 nm	-1.0–8.9 ps/(nm km)
Chromatic Dispersion @1,310 nm	-8 ps/(nm km) (typical)
Cut-Off Wavelength ( $\lambda_{cc}$ )	≤ 1,260 nm
<b>Group Refractive Index</b>	
@ 1310 nm	1,471
@ 1550 nm	1,470
@ 1625 nm	1,470
<b>Mode Field Diameter</b>	
@ 1,550 nm	8.4 ± 0.6 µm
Effective area @ 1550 nm	52 µm <sup>2</sup> (typical) @ 1,550 nm
PMD Individual Fiber	< 0.1 ps/√km
Fiber Curl	≥ 4.0 m radius
Tensile Proof Test	100 kpsi (0.69 GPa)
Coating Strip Force	≥ 1.3 N ≤ 8.9 N
Macrobending 1 turn, 32 mm, @ 1,550 nm	≤ 0.5 dB
Macrobending 1 turn, 32 mm, @ 1,625 nm	≤ 0.5 dB
Macrobending 100 turn, 60 mm, @ 1,550 nm	≤ 0.05 dB
Macrobending 100 turn, 60 mm, @ 1625 nm	≤ 0.05 dB

Values are valid for cabled fiber, local attenuation discontinuity ≤ 0.1 dB.

Note: Due to OTDR measurement uncertainty KDP cannot guarantee attenuation values at fibers shorter than 1,000 m.

# Bend Insensitive Single-Mode Fiber

## ITU-T G.652.D & G.657.A1 – 200 $\mu\text{m}$

### OFS AllWave® Flex Fiber 200 Microm

Cladding Diameter	125.0 $\pm$ 0.7 $\mu\text{m}$
Cladding Non-Circularity	$\leq$ 1 %
Core / Cladding Concentricity Error (Offset)	$\leq$ 0.5 $\mu\text{m}$
Coating Diameter (Coloured)	200 $\pm$ 10 $\mu\text{m}$
Coating – Cladding Concentricity Error (Offset)	$\leq$ 12 $\mu\text{m}$
<b>Attenuation – Loose Tube Cables</b>	
@ 1,310 nm (typical / maximum)	0.31 / 0.35 dB/km
@ 1,550 nm (typical / maximum)	0.20 / 0.24 dB/km
@ 1,625 nm (typical / maximum)	0.21 / 0.26 dB/km
<b>Attenuation – Tight Buffer Cables</b>	
@ 1,310 nm (typical / maximum)	0.30 / 0.35 dB/km
@ 1,550 nm (typical / maximum)	0.25 / 0.30 dB/km
@ 1,625 nm (typical / maximum)	0.35 / 0.40 dB/km
<b>Chromatic Dispersion</b>	
Zero Dispersion Wavelength ( $\lambda_0$ )	1,302–1,322 nm
Zero Dispersion Slope ( $S_0$ )	$\leq$ 0.092 ps/nm <sup>2</sup> km
<b>Group Refractive Index</b>	
@ 1,310 nm	1,467
@ 1,550 nm	1,468
<b>Mode Field Diameter</b>	
@ 1,310 nm	8.5–9.3 $\mu\text{m}$
@ 1,550 nm	9.4–10.4 $\mu\text{m}$
Cut-Off Wavelength ( $\lambda_c$ )	$\leq$ 1,260 nm
PMD Individual Fiber	< 0.1 ps/ $\sqrt{\text{km}}$
Tensile Proof Test	100 kpsi (0.69 GPa)
Coating Strip Force	0.5 N $\leq$ CSF $\leq$ 8.9 N
Macrobending 100 turns, 25 mm, @ 1,550 nm	$\leq$ 0.01 dB
Macrobending 100 turns, 25 mm, @ 1,625 nm	$\leq$ 0.05 dB
Macrobending 10 turns, 15 mm, @ 1,550 nm	$\leq$ 0.2 dB
Macrobending 10 turns, 15 mm, @ 1,625 nm	$\leq$ 0.5 dB
Macrobending 1 turn, 10 mm, @ 1,550 nm	$\leq$ 0.2 dB
Macrobending 1 turn, 10 mm, @ 1,625 nm	$\leq$ 0.5 dB

Values are valid for cabled fiber, local attenuation discontinuity  $\leq$  0.1 dB.

Note: Due to OTDR measurement uncertainty KDP cannot guarantee attenuation values at fibers shorter than 1,000 m.



# Bend Insensitive Multi-Mode Fiber 50/125 OM2

## OFS LaserWave® FLEX G+ Fiber

	BW 500/500	BW 500/800	BW 600/1200
Core Diameter	50 ± 2.5 µm	50 ± 2.5 µm	50 ± 2.5 µm
Core Non-Circularity	≤ 5 %	≤ 5 %	≤ 5 %
Cladding Diameter	125.0 ± 0.8 µm	125.0 ± 0.8 µm	125.0 ± 0.8 µm
Cladding Non-Circularity	≤ 1.0 %	≤ 1.0 %	≤ 1.0 %
Core / Cladding Concentricity Error (Offset)	≤ 1.0 µm	≤ 1.0 µm	≤ 1.0 µm
Coating Diameter (Coloured)	242 ± 5 µm	242 ± 5 µm	242 ± 5 µm
Coating – Cladding Concentricity Error (Offset)	≤ 8 µm	≤ 8 µm	≤ 8 µm
<b>Attenuation – Loose Tube Cables</b>			
@ 850 nm (typical / maximum)	2.0 / 3.5 dB/km	2.0 / 3.5 dB/km	2.0 / 3.5 dB/km
@ 1,300 nm (typical / maximum)	0.7 / 1.5 dB/km	0.7 / 1.5 dB/km	0.7 / 1.5 dB/km
<b>Attenuation – Tight Buffer Cables</b>			
@ 850 nm (typical / maximum)	2.5 / 3.5 dB/km	2.5 / 3.5 dB/km	2.5 / 3.5 dB/km
@ 1,300 nm (typical / maximum)	0.5 / 1.5 dB/km	0.5 / 1.5 dB/km	0.5 / 1.5 dB/km
<b>Group Refractive Index</b>			
@ 850 nm	1,483	1,483	1,483
@ 1,300 nm	1,479	1,479	1,479
<b>Bandwidth (overfilled launch)</b>			
@ 850 nm	≥ 500 MHz-km	≥ 500 MHz-km	≥ 600 MHz-km
@ 1,300 nm	≥ 500 MHz-km	≥ 800 MHz-km	≥ 1,200 MHz-km
<b>Numerical Aperture</b>	0.20 ± 0.010	0.20 ± 0.010	0.20 ± 0.010
<b>Transmission Distance (Link Length)</b>			
IG Ethernet 850 nm, Serial Laser 1000BASE-SX		550 meters	
IG Ethernet 1,300 nm, Serial Laser 1000BASE-LX		550 meters	
IG Ethernet 1,300 nm, Based on IEEE 10 Gbps model where EMB ≥ 600 MHz/km			750 meters
IG Ethernet 1,300 nm, Based on IEEE 10 Gbps model where OFL ≥ 1,200 MHz/km			2,000 meters
<b>Tensile Proof Test</b>	100 kpsi (0.69 GPa)	100 kpsi (0.69 GPa)	100 kpsi (0.69 GPa)
<b>Coating Strip Force</b>	0.9–4.4 N (2.7 N typical)	0.9–4.4 N (2.7 N typical)	0.9–4.4 N (2.7 N typical)
<b>Macrobending 100 turns, 37.5 mm, @ 850 nm</b>	≤ 0.5 dB	≤ 0.5 dB	≤ 0.5 dB
<b>Macrobending 100 turns, 37.5 mm, @ 1,300 nm</b>	≤ 0.5 dB	≤ 0.5 dB	≤ 0.5 dB
<b>Macrobending 2 turn, 15 mm, @ 850 nm</b>	≤ 0.1 dB	≤ 0.1 dB	≤ 0.1 dB
<b>Macrobending 2 turn, 15 mm, @ 1,300 nm</b>	≤ 0.3 dB	≤ 0.3 dB	≤ 0.3 dB
<b>Macrobending 2 turn, 7.5 mm, @ 850 nm</b>	≤ 0.2 dB	≤ 0.2 dB	≤ 0.2 dB
<b>Macrobending 2 turn, 7.5 mm, @ 1,300 nm</b>	≤ 0.5 dB	≤ 0.5 dB	≤ 0.5 dB

Values are valid for cabled fiber; local attenuation discontinuity ≤ 0.2 dB.

Note: Due to OTDR measurement uncertainty KDP cannot guarantee attenuation values at fibers shorter than 1,000 m.

# Bend Insensitive Multi-Mode Fiber

## 50/125 OM3 & OM4

### OFS LaserWave® FLEX G+ Fiber

	OM3	OM4
Core Diameter	50 ± 2.5 µm	50 ± 2.5 µm
Core Non-Circularity	≤ 5 %	≤ 5 %
Cladding Diameter	125.0 ± 0.8 µm	125.0 ± 0.8 µm
Cladding Non-Circularity	≤ 0.7 %	≤ 0.7 %
Core / Cladding Concentricity Error (Offset)	≤ 1.0 µm	≤ 1.0 µm
Coating Diameter (Coloured)	247–260 µm	247–260 µm
Coating – Cladding Concentricity Error (Offset)	≤ 8 µm	≤ 8 µm
<b>Attenuation – Loose Tube Cables</b>		
@ 850 nm (typical / maximum)	2.0 / 3.5 dB/km	2.0 / 3.5 dB/km
@ 1300 nm (typical / maximum)	0.5 / 1.5 dB/km	0.5 / 1.5 dB/km
<b>Attenuation – Tight Buffer Cables</b>		
@ 850 nm (typical / maximum)	2.1 / 3.5 dB/km	2.1 / 3.5 dB/km
@ 1300 nm (typical / maximum)	0.7 / 1.5 dB/km	0.7 / 1.5 dB/km
<b>Chromatic Dispersion</b>		
Zero Dispersion Wavelength ( $\lambda_0$ )	1,295–1,315 nm	1,295–1,315 nm
Zero Dispersion Slope ( $S_0$ )	≤ 0.101 ps/nm <sup>2</sup> km	≤ 0.101 ps/nm <sup>2</sup> km
<b>Group Refractive Index</b>		
@ 850 nm	1,483	1,483
@ 1,300 nm	1,479	1,479
<b>Backscatter Coefficient</b>		
@ 850 nm	-68.4 dB	-68.4 dB
@ 1,300 nm	-75.8 dB	-75.8 dB
<b>Laser Bandwidth/EMB</b>		
@ 850 nm	2,000 MHz-km	4,700 MHz-km
@ 1,300 nm	500 MHz-km	500 MHz-km
Overfilled @ 850 nm	1,500 MHz-km	3,500 MHz-km
Overfilled @ 1,300 nm	500 MHz-km	500 MHz-km
<b>Numerical Aperture</b>		
	0.200 ± 0.010	0.200 ± 0.010
<b>Transmission Distance (Link Length)</b>		
100G Ethernet 850 nm (100GBASE-SR10)	140 meters <sup>1)</sup>	190 meters <sup>1)</sup>
40G Ethernet 850 nm (40GBASE-SR4)	140 meters <sup>1)</sup>	190 meters <sup>1)</sup>
10G Ethernet 850 nm (10GBASE-S)	300 meters	550 meters <sup>3)</sup>
10G Ethernet 1,310 nm CWDM lasers (10GBASE-LX4)	300 meters	300 meters
10G Ethernet 1,310 nm serial w/EDC (10GBASE-LRM)	220 meters	220 meters
1G Ethernet 850 nm (1000GBASE-SX)	1,000 meters <sup>2)</sup>	1,040 meters
1G Ethernet 1,310 nm (1000GBASE-LX)	600 meters	600 meters
<b>Tensile Proof Test</b>		
	100 kpsi (0.69 GPa)	100 kpsi (0.69 GPa)
<b>Coating Strip Force</b>		
	0.9–4.4 N (2.7 N typical)	0.9–4.4 N (2.7 N typical)
<b>Macrobending 100 turns, 37.5 mm, @ 850 nm</b>		
	≤ 0.5 dB	≤ 0.5 dB
<b>Macrobending 100 turns, 37.5 mm, @ 1,300 nm</b>		
	≤ 0.5 dB	≤ 0.5 dB
<b>Macrobending 2 turn, 15 mm, @ 850 nm</b>		
	≤ 0.1 dB	≤ 0.1 dB
<b>Macrobending 2 turn, 15 mm, @ 1,300 nm</b>		
	≤ 0.3 dB	≤ 0.3 dB
<b>Macrobending 2 turn, 7.5 mm, @ 850 nm</b>		
	≤ 0.2 dB	≤ 0.2 dB
<b>Macrobending 2 turn, 7.5 mm, @ 1,300 nm</b>		
	≤ 0.5 dB	≤ 0.5 dB

Values are valid for cabled fiber, local attenuation discontinuity ≤ 0.2 dB.

Note: due to OTDR measurement uncertainty KDP cannot guarantee attenuation values at fibers shorter than 1,000 m.

<sup>1)</sup> Distances assume maximum 1.0 dB total splice/connector loss, maximum 3.0 dB/km cable attenuation at 850 nm, and VCSEL spectral width of ≤ 0.45 nm.

100 Meter reach over OM3 and 150 meter reach over OM4 as defined by IEEE 802.3ba.

<sup>2)</sup> 1,000 meter reach assuming total connection plus splice loss of 0.9 dB.

<sup>3)</sup> 550 meter reach assuming 3.5 dB/km maximum cabled attenuation at 850 nm plus 1.0 dB of total connection and splice loss, or 3.0 dB maximum cabled Attenuation at 850 nm and 1.3 dB total connection and splice loss, 400 meter reach as defined by IEEE 802.3ae.

# Multi-Mode Fiber 62.5/125 OMI

## OFS Laser Optimized MM Fiber OMI+

Core Diameter	62.5 ± 2.5 µm
Core Non-Circularity	≤ 5 %
Cladding Diameter	125.0 ± 1.0 µm
Cladding Non-Circularity	≤ 1.0 %
Core / Cladding Concentricity Error (Offset)	≤ 1.0 µm
Coating Diameter (Coloured)	247–260 µm
Coating – Cladding Concentricity Error (Offset)	≤ 8 µm
<b>Attenuation – Loose Tube Cables</b>	
@ 850 nm (typical / maximum)	2.6 / 3.5 dB/km
@ 1,300 nm (typical / maximum)	0.5 / 1.5 dB/km
<b>Attenuation – Tight Buffer Cables</b>	
@ 850 nm (typical / maximum)	2.6 / 3.5 dB/km
@ 1,300 nm (typical / maximum)	0.5 / 1.5 dB/km
<b>Group Refractive Index</b>	
@ 850 nm	1,496
@ 1,300 nm	1,491
<b>Backscatter Coefficient</b>	
@ 850 nm	-64.8 dB
@ 1,300 nm	-72.1 dB
<b>Bandwidth (overfilled launch)</b>	
@ 850 nm	≥ 220 MHz-km
@ 1,300 nm	≥ 500 MHz-km
Numerical Aperture	0.20 ± 0.015
<b>Transmission Distance (Link Length)</b>	
Gigabit Ethernet 850 nm	300 meters
Gigabit Ethernet 1,300 nm	550 meters
<b>Chromatic Dispersion</b>	
Zero Dispersion Wavelength ( $\lambda_0$ )	1,320–1,365 nm ≤ 0.11 ps/nm <sup>2</sup> km (1,320 ≤ $\lambda_0$ ≤ 1,348 nm)
Zero Dispersion Slope ( $S_0$ )	≤ 0.001 × (1,458 – $\lambda_0$ ) (1,348 ≤ $\lambda_0$ ≤ 1,365 nm)
Tensile Proof Test	100 kpsi (0.69 GPa)
Coating Strip Force	0.9–4.4 N (2.7 N typical)
Macrobending 100 turns, 75 mm, @ 850 nm	≤ 0.5 dB
Macrobending 100 turns, 75 mm, @ 1,300 nm	≤ 0.5 dB

Values are valid for cabled fiber, local attenuation discontinuity ≤ 0.2 dB.

Note: Due to OTDR measurement uncertainty KDP cannot guarantee attenuation values at fibers shorter than 1,000 m.

# Standards – Fiber Optic Cables

ITU-T Rec. G.652	International Telecommunication Union – Telecommunication Standardization Sector recommendation G.652 – characteristics of a single-mode optical fiber and cable with zero-dispersion wavelength around 1,310 nm
ITU-T Rec. G.655	International Telecommunication Union – Telecommunication Standardization Sector recommendation G.655 – characteristics of a non-zero dispersion-shifted single-mode optical fiber and cable
ITU-T Rec. G.656	International Telecommunication Union – Telecommunication Standardization Sector recommendation G.656 – characteristics of a non-zero dispersion for wideband optical transport
ITU-T Rec. G.651	International Telecommunication Union – Telecommunication Standardization Sector recommendation G.651 – characteristics of a 50/125µm multi-mode graded index optical fiber and cable
ITU-T Rec. G.657	International Telecommunication Union - Recommendation G.657 – the basic geometric, transmission and mechanical parameters of the singlemode optical fibers with reduced susceptibility of fiber to the bends in access of the telecommunication networks
EN 60793-1	Optical Fibers – Part 1: General Specification: measurement methods and test procedures
EN 60794-1	Fiber Optic Cables – General specification and test procedures
EN 60794-2	Fiber Optic Cables – Indoor cables
EN 60794-3	Fiber Optic Cables – Outdoor cables
EN 50266-1	Common test methods for cables under fire conditions – Test for vertical
EN 50266-2-2	flame spread of vertically-mounted bunched wires or cables
EN 50267-1	Common test methods for cables under fire conditions –
EN 50267-2-2	Test on gases evolved during combustion of materials from cables
EN 50267-2-3	
EN 61034-1	Measurement of smoke density of cables burning under defined conditions
EN 61034-2	
IEC 60331-11	Tests of electric cables under fire conditions – Circuit integrity – Part 11: Device – a singly burning at a temperature of at least 750 °C
IEC 60331-25	Tests for electric cables under fire conditions – Circuit integrity – Part 25: measurement methods – Fiber Optic Cables
IEC 60332-1-1	Tests of electric and fiber optic cables under fire conditions – Part 1-1: Test of vertical flame spread to wire or cable with a small section of insulation – Testing equipment
IEC 60332-2-1	Tests of electric and fiber optic cables under the fire conditions – Part 2-1: Test of vertical flame spread to wire or cable with a small section of insulation – Testing equipment
IEC 60332-3	Tests on electric cables under fire condition

## MANUFACTURE & TESTING

All KDP fiber optic cables are manufactured in accordance with IEC 60793 and are tested according to IEC 60794. LSZH (Low Smoke Zero Halogen) jackets, where mentioned, are understood flame retardant according to recognized standards, as well.

# Code table

## TIGHT BUFFER CABLES

Position	1 Character	2 Character	3 Character	4 Character
	0 Fiber in tight SP	0 Buffer only	A PA buffer	0 PE jacket
	1 Simplex cable	1 Ø simplex 1.8 mm	B	1 LSZH jacket
	2 Duplex cable	2 Ø simplex 2.0 mm	C –	2 LSZH jacket + FRP members in jacket
	3 Heavy-duplex cable	3 Ø simplex 3.0 mm	D –	3 PE jacket + FRP members in jacket
	4 Break-out cable	4 Ø simplex 2.4 mm	E –	4 LSZH / SWA / LSZH
	5 Distribution cable	5 –	F LSZH Free-tight buffer	5 LSZH / SWA / PE
	6 Multi-distribution cable	6 Ø simplex 1.6 mm	G –	6 PVC jacket – inner / universal cable
	7 Drop cable	7 Ø simplex 1.7 mm	H –	7 PUR jacket – inner / outdoor
	8 Break-out cable without central strength member	8 Ø simplex 2.8 mm	– –	8 LSZH / glass yarn / LSZH
	9 Quadplex cable	9 Ø simplex 2.9 mm	– –	9 PUR jacket outdoor only
		A Distribution cable – Aramid	S LSZH Free-strip (semi-tight) buffer	A HDPE jacket
		E Distribution cable – E-glass	T LSZH Tight buffer	B Buffer
		S Distribution cable – CST	– –	S E-glass yarn under jacket
		V Distribution cable – waterblocking Aramid		K Aramid yarn under jacket
		U Subunits with fibers	X LSZH Shielded buffer	– –
		Y –	Y –	Y HDPE jacket + FRP elements in jacket
		Z –	Z –	Z –
Z	Custom designs		0 Fiber without buffer	

## LOOSE TUBE CABLES

Position	1 Character	2 Character	3 Character	4 Character
A	CLT 2.5 mm	0 –	0 –	0 PE outer jacket, dry core
B	CLT 3.0 mm	1 FIG.8 + CST one jacket	1 –	1 PE outer jacket, filled core
C	MLT 6 × 1.8 mm [6 × 12] – 72	2 FIG.8 + CST two jackets	2 Messenger 2.0 mm	2 LSZH outer jacket, dry core
D	MLT 6 × 2.3 mm [6 × 24] – 144	3 4 × 12	3 Messenger 3.0 mm	3 LSZH outer jacket, filled core
E	MLT 5 × 2.5 mm [5 × 12] – 60	4 6 × 12	4 Messenger 4.5 mm	4 PA outer jacket, dry core
F	MLT 6 × 2.5 mm [6 × 12] – 72	5 8 × 12	5 –	5 PA outer jacket, filled core
G	MLT 8 × 2.5 mm [8 × 12] – 96	6 12 × 12	6 Messenger 1.6 mm	6 PE / PA outer jacket, dry core
H	MLT 12 × 2.5 mm [12 × 12] – 144	7 –	7 FRP messenger	7 PE / PA outer jacket, filled core
I	MLT 18 × 2.5 mm [18 × 12] – 216	8 FIG.8	8 FRP members in core	8 LSZH / PA outer jacket, dry core
J	MLT 12 × 3.5 mm [12 × 24] – 288	9 –	9 FeZn wires in jacket	9 LSZH / PA outer jacket, filled core
K	MLT 8 × 2.3 mm [8 × 24] – 192	A Aramid (WB)	A –	A AL + PE outer jacket, dry core
L	MLT 4 × 2.5 mm [4 × 12] – 48	B –	B –	B AL + PE outer jacket, filled core
M	MLT 36 × 2.5 mm [36 × 12] – 432	C CST one jacket with aramid under jacket	C Inner PVC jacket	C PA / PE outer jacket, dry core
N	ADSS	D CST two jacket with aramid under jacket	D Supporting element FeZn wire	D PA / PE outer jacket, filled core
P	MLT 8 × 1.8 mm [8 × 12] – 96	E E-glass (WB) – standart rodent protection	E –	E PA / LSZH outer jacket, dry core
Q	MLT 8 × 1.5 mm [8 × 12] – 96	F FRPA	F Inner FRNC jacket	F PA / LSZH outer jacket, filled core
R	MLT 12 × 1.8 mm [12 × 12] – 144	G E-glass (Glue) – standard rodent protection	G –	G PUR outer jacket, dry core
S	MLT 12 × 2.3 mm [12 × 24] – 288	H CST single jacket	H –	H PUR outer jacket, filled core
T	MLT 6 × 1.5 mm [6 × 12] – 72	I CST two jackets with E-glass yarns under jacket	I –	I HDPE outer jacket, dry core
U	MLT 5 × 1.8 mm [5 × 12] – 60	J –	J –	J –
V	MLT 18 × 1.8 mm [18 × 12] – 216	K –	K –	K HDPE outer jacket, filled core
W	MLT 12 × 1.5 mm [12 × 12] – 144	L Attenuated (lower tensile strength and jacket)	L Inner Al/PE (Laminated)	L –
X	CLT 2.0 mm	M Micro cable	M –	M –
Y	CLT 3.5 mm	N –	N –	N –
Z	Custom designs	P (jacket – aramid – jacket)	P Inner PE jacket	P PVC outer jacket, dry core
		Q (jacket – E-glass – jacket)	Q –	Q PVC outer jacket, filled core
β	FRNC bundle without gel	R Improved rodent protection (WB E-glass)	R –	R –
#	FRNC bundle with gel	S Self-supporting nonmetallic strength member	S –	S –
		T Self-supporting dielectric member – two jackets	T –	T Track resistant HDPE
		U –	U 3 kN – two jackets	U –
		V –	V 6 kN – one jacket	V –
		W SWA two jackets – without strength members	W 10 kN – one jacket	W –
		X SWA two jackets – aramid on core	X 3 kN – two jackets	X –
		Y SWA two jackets – E-glass on core	Y 6 kN – one jacket	Y –
		Z –	Z 10 kN – one jacket	Z –

# Comparison of OS1 and OS2 Fiber

Categories OS1 and OS2 are related to cable transmission performance. See table below.

Wavelength [nm]	Maximum attenuation [dB/km]	
	OS1	OS2
1,310	1.0	0.4
1,383	Not Specified	0.4
1,550	1.0	0.4

## Stripability of the Tight Buffered Fiber

<b>TIGHT (CODE T)</b>	stripability up to 10 cm
<b>FREE (CODE F)</b>	stripability more than 100 cm

## Used Abbreviations

<b>LSZH</b>	<b>LOW SMOKE, ZERO HALOGEN</b>
<b>LS0H</b>	<b>LOW SMOKE, ZERO HALOGEN</b>
<b>LSHF</b>	<b>LOW SMOKE, HALOGEN FREE</b>
<b>HFFR</b>	<b>HALOGEN FREE, FLAME RETARDANT</b>
<b>FRNC</b>	<b>FIRE RETARDANT, NON-CORROSIVE</b>
<b>FR-LSZH</b>	<b>FIRE RETARDANT – LOW SMOKE, ZERO HALOGEN</b>

## Properties of the Cable Sheath

	MDPE	HDPE	PA	FR-LSZH	PUR
<b>Flexibility</b>	Medium	Low	Low	High	Very High
<b>Water Resistance</b>	High	High	Medium	Medium	Medium
<b>Abrasion Resistance</b>	High	High	High	Low	High
<b>UV Radiation Resistance</b>	High	High	Low	High	High
<b>Brittleness in Low Temperature</b>	Medium	Medium	Low	Medium	Very Low

# Chemical Resistance Table (@ 20 °C)

	LDPE	HDPE	PA	FR-LSZH	PUR
Acids, Dilute or Weak	E	E	F	N	G
Acids*, Strong or Concentrated	E	E	N	N	F
Alcohols, Aliphatic	E	E	N	N	F
Aldehydes	G	G	F	F	G
Bases	E	E	F	G	N
Esters	G	G	E	N	N
Hydrocarbons, Aliphatic	F	G	E	F	E
Hydrocarbons, Aromatic	F	G	E	N	N
Hydrocarbons, Halogenated	N	F	G	N	N
Ketones	G	G	E	N	N
Oxidizing Agents, Strong	F	F	N	N	N
Salts	E	E	E	G	E
Crude Oil	N	N	G	F	F
Kerosene	F	F	E	N	F
Mineral Oil	G	G	E	N	F

\* For oxidizing acids, see „Oxidizing Agents, strong“.

<b>E</b>	30 days of constant exposure causes no damage. Plastic may tolerate for years.
<b>G</b>	Little or no damage after 30 days of constant exposure to the reagent.
<b>F</b>	Some effect after 7 days of constant exposure to the reagent. The effect may be crazing, cracking, loss of strength or discoloration, depending on the plastic.
<b>N</b>	Not recommended. Immediate damage may occur. Depending on the plastic, the effect may be severe crazing, cracking, loss of strength, discoloration deformation, dissolution or permeation loss.

Note: This table must be considered as an orientation.

## Fire properties

		METHOD	COMMENT
Fire properties – Flammability	pass	EN 60332-3-22 (cat.A) EN 50266-2-2	- 40 min exposure to flame - length of the burned sample max. 2.5 m
Fire properties – Acid gases	pass	EN 50267 EN 50267-2-2 EN 50267-2-3 EN 60754-1 EN 60754-2	- min. pH 4.3 - max. 10 µS/mm
Fire properties – Smoke density	pass	EN 61034-1 EN 61034-2	- min. 60 %

Note: Valid for all FR-LSZH sheaths.

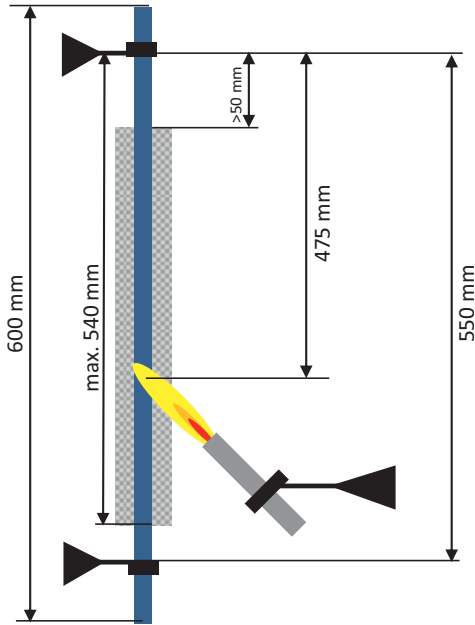
# Fire Properties

## FLAME-RETARDANT

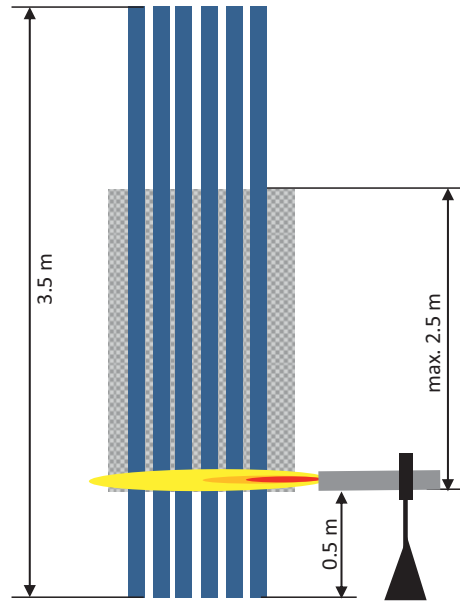
The cable must meet the requirements of the test specified in IEC standard 60332-3 or IEC 60332-1. The cable does not propagate fire and is self-extinguishing.

Notice: You can not assume that if the cable passes the test according 60332-1, a bundle of such cables passing a test 60332-3.

TEST ACC. TO IEC 60332-1



TEST ACC. TO IEC 60332-3



 Charred part of the cable

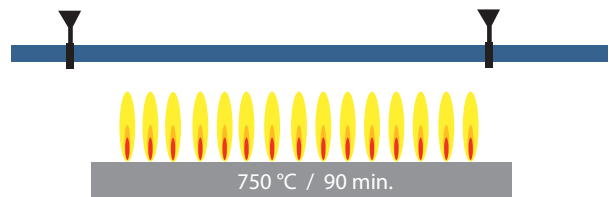
Cable Diameter	Burning Time
≤ 25 mm	60 sec
≥ 25 mm; ≤ 50 mm	120 sec

Category	Amount of Burning Material	Burning Time
A*	7.0 lt/m	40 min
B	3.5 lt/m	40 min
C	1.5 lt/m	20 min
D	0.5 lt/m	20 min

\* KDP Cables

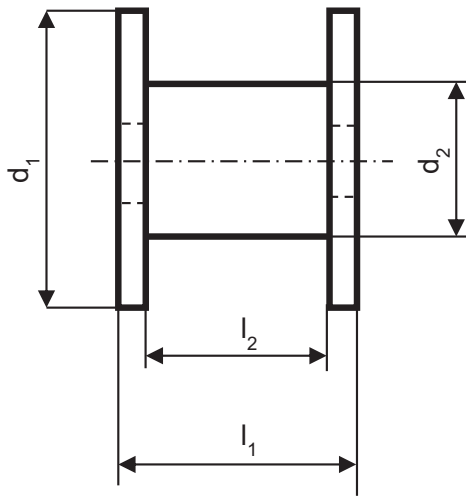
## FIRE-RESISTANT

The cable must meet the requirements test specified in standard IEC 60331-11 and 25. The cable must be functional a minimum of 90 minutes in direct fire.



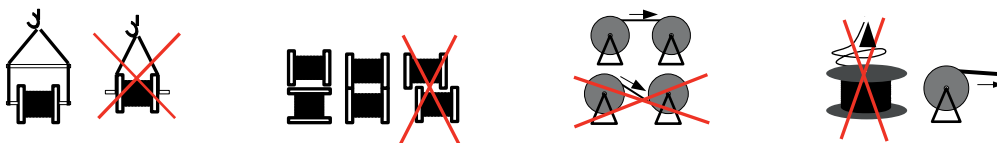


# Cable Drum



Drum	Material	$d_1$ [mm]	$d_2$ [mm]	$l_1$ [mm]	$l_2$ [mm]
450	Plywood drum	450	300	420	390
600	Plywood drum	600	300	420	490
755	Plywood drum	755	300	420	390
1,000	Plywood drum	1,000	640	630	600
1,200	Plywood drum	1,200	640	630	600
1,200	Plywood drum	1,200	640	740	710
1,400	Plywood drum	1,400	640	740	700
1,400	Plywood drum	1,400	640	830	790
KTS710	Solid wood	710	355	502	400
KTS800	Solid wood	800	400	502	400
KTS900	Solid wood	900	450	662	560
KTS1000	Solid wood	1,000	500	662	560
KTS1250	Solid wood	1,250	630	830	710
KTS1400	Solid wood	1,400	710	860	710
KTS1600	Solid wood	1,600	800	1,050	900
KTS1800	Solid wood	1,800	1,000	1,100	840
KTS2000	Solid wood	2,000	1,250	1,350	1,045
KTS2240	Solid wood	2,240	1,400	1,450	1,140

# Manipulation









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